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W I T H

PLAIN and USEFUL RULES
FOR THE GENERAL'S OFFICE

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G O U T Y P E O P L E.

By *THOMAS SHORT*, M. D.

L O N D O N:

Printed for T. LONGMAN, in *Pater-noster-row*;
and A. MILLAR, in the *Strand*.

M D C C L.

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DR. J. R. O'NEILL

PHYSICS DEPARTMENT

UNIVERSITY OF CHICAGO

CHICAGO, ILL.

TO

DR. J. R. O'NEILL

PHYSICS DEPARTMENT

UNIVERSITY OF CHICAGO

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UNIVERSITY OF CHICAGO

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who have wrote on that Subject.

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W E A T H E R A N D M E T E O R S.

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in the Strand,*

P R E F A C E.

THAT a Man write well, for the Benefit and Information of the Publick, it is requisite that the Subject be of his own Option, and not by Compulsion; and that he be as far acquainted with what he treats of, as his Situation and Opportunities can enable him.

Thus, in the vegetable Kingdom, many learned Men, in several Ages, have applied themselves to the Study of the Nature, Principles, Virtues, and Uses of some particular Plants, despairing of a successful Undertaking of the Whole. But if several Authors treat of the same Vegetable, they should be sure, either that each is able to cast some

A new

new Light upon it, properly to promote its good, or prevent its bad Effect: When, or why, and how it produces one or the other, or its more general Use, requires a more strict and particular Consideration; to prevent its Abuse; or to set the Users right when it has good or bad Qualities falsely ascribed to it by prejudiced Persons; or its Use becomes a considerable Branch both of the Revenue and Trade.

Though there have been several European Tracts written on this Indian Plant, yet their Authors have too often implicitly taken their Materials upon Trust, either from Travellers, who have only given its natural History, and Use among the Orientals; or from the Importers and Venders; or such as have given it random Virtues. And though some have ascribed to it far greater medicinal Qualities than it ever possessed, yet have they neither afforded us the least Light into its Principles, nor any rational Account how, or why, we are to expect such wonderful Effects from it; nor adapted its Use to different Constitutions, Ages, Climates, &c. Yet we find very few Things,

Things, either in Diet or Medicine, that are equally beneficial to all. We may daily observe, that Tea throws some into the Vapours, affects their Completion, Spirits, Nerves, &c. In others, it struggles against Retention, gives them the Colic or Gripes; and affects not a few with Tremors, &c. Most Authors have omitted to proportion its Strength, Quantity, Use, and Kind, for the medicinal Purpose intended. Which Considerations are neither sufficient with respect to the Plant itself, nor to the People of different Nations, Constitutions, Sexes, Conditions, and Ages, that use it. Since it is so general a Tipple, we might reasonably expect a Knowledge of its Nature and Properties should be so too.

To this Discourse on Tea is added, a short one on Milk; and some small Hints on Sugar; and, to compleat the Repast, we have served up a Salver of Made-Wines. And, that Gentlemen may not think themselves ill used or neglected, whilst the Ladies are regaling themselves, we have entertained them with a Bowl of Punch, and Pipe of right Virginia Tobacco: And, that they may be

happy in one another's frequent Conversation, another Hand has been so generous as to prescribe some useful Rules to prevent their Danger, alleviate and shorten their gouty Pains and Diseases.

C O N-

CONTENTS.

DISCOURSE I.

On T E A.

CHAP. I.	<i>A Description of the Tea Shrub, Leaf, Flowers, and Seeds,</i>	Page 1.
CHAP. II.	<i>Of the Culture, Growth, Gathering, and Sorting of Tea,</i>	6
CHAP. III.	<i>Of the Preparation of the gathered Tea-Leaf,</i>	11
CHAP. IV.	<i>Promiscuous Observations on the above Chapters,</i>	15
CHAP. V.	<i>The Commercial History of Tea,</i>	20
CHAP. VI.	<i>Of the Principles of Tea,</i>	33
CHAP. VII.	<i>How Tea is used ; and of the other Ingredients,</i>	39
CHAP. VIII.	<i>Who, when, and how to use Tea,</i>	43
CHAP. IX.	<i>Of the Effects and Virtues of Tea,</i>	46
CHAP. X.	<i>Of the ill or bad Effects of Tea,</i>	73

DISCOURSE II.

Of Sugar, Milk, and Made Wines.

CHAP. I.	<i>Of Sugar,</i>	77
CHAP. II.	<i>Of Milk,</i>	84
CHAP. III.	<i>Of Made-Wines, Of Mead, Metheglin, and Hydromel,</i>	123 <i>ibid.</i>
CHAP. IV.	<i>Of Birch Wine, Gooseberry Wine, Cowslip and Orange Wines,</i>	130
CHAP. V.	<i>Of Raspberry Wine,</i>	157

DIS-

C O N T E N T S.

D I S C O U R S E III.

CHAP. I. Of Brandy,	160
CHAP. II. Of Rum,	173
CHAP. III. Of Arrack,	183
CHAP. IV. Of Punch,	188
CHAP. V. Of Cyder,	202
CHAP. VI. Of Tobacco,	227
CHAP. VII. Vinum Britannicum, &c.	258
<i>Of the Antiquity of Malt-Liquor,</i>	<i>ibid.</i>
<i>Of the Effects of fermented Liquors in general,</i> <i>and the Manner how they are produced,</i>	261
<i>Of the Nature of Malt-Liquors in general,</i>	266
<i>Of the Choice and Usefulness of Malt-Liquors in</i> <i>general,</i>	272
<i>At what Times of Life, and Seasons of the Year,</i> <i>Malt-Liquor is the safest and most proper,</i>	281
<i>Of the Differences of Malt-Liquors,</i>	288
<i>To what Constitutions, and in what Cases, par-</i> <i>ticular Malt-Liquors are agreeable, or disa-</i> <i>greeable; with the Reasons thereof,</i>	294
<i>Malt-Liquors compared to Wine, in respect of</i> <i>English Constitutions,</i>	308
CHAP. VIII. Of Cold Bathing,	319
<i>A Table of the Temperature of several Baths and</i> <i>Springs,</i>	352
<i>Of warm and tepid Bathing,</i>	369
<i>Of bathing in Mineral Waters hot or cold,</i>	383
CHAP. IX. Plain and necessary Directions for Gouty Persons,	405, & seq.

T H E

T H E

NATURAL, } } COMMERCIAL,
EXPERIMENTAL, } } And DIETETIC

H I S T O R Y

O F

T E A;

W I T H

Its Growth, Culture, Preparation;
Kinds, and Quantities imported;

LAWS about it, and DUTIES laid on it;
the several WAYS of using it;

Its good and bad QUALITIES or EFFECTS
on the USERS, &c.

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HISTORY

OF
THE
FEDERAL BUREAU OF INVESTIGATION

WITH

IN Growth, Culture, Preparation;
Kinds and Quantities Imported;

Exportation and Distribution;
and the History of the Bureau

IN THE
UNITED STATES

DISCOURSE I.
ON
T E A.

CHAP. I.

*A Description of the TEA SHRUB, LEAF,
FLOWERS, and SEEDS.*

KEMPFER in his *Amœnitates Exoticæ*, and in the Appendix to the second Volume of his History of Japan, gives the fullest and truest Account of this Shrub and its Leaf, that I have yet found; which I shall therefore borrow here. The *Tea-tree* is a Shrub that grows but slowly; it rises to six Foot and higher, has a black, woody, irregular branched Root. Its *Bark* is dry, thin, weak, chesnut coloured, greyish on the Stem, and somewhat inclined to green on the Extremities of the Twigs; it is firm, and adheres closely to the

B Wood,

Wood, and is covered with a very thin Skin, which sometimes loosens of itself, as the Bark grows dry. This being removed, the Bark appears of a greenish Colour, and smells somewhat like the *Hazle-tree* Leaves, but more disagreeable and offensive, and of a bitter, nauseous, and astringent *Taste*.

The *Wood* is hard and fibrous, of a greenish Colour, inclining to white, of a very offensive Smell when green; the Pith, which is very small, sticks close to the Wood.

The *Branches* and *Twigs* are many in Number, growing without any Order, slender, of different Sizes, tho' short in the main, wanting those Rings which in Trees and Shrubs denote their yearly Growth; very thick beset with Leaves, without any Order, on short, fat, green, foot Stalks, roundish, and smooth on the Back, but hollow, and somewhat compressed. On the opposite Side stand the *Leaves*: These are of a soft Substance, between membranous and fleshy; in Substance, Shape, Colour, and Size, when full grown, like the *Morella Cherry-tree*; but when young and tender, they resemble (except in Colour) the *Spindle-tree*, with red Berries, called
Euonymus.

Euonymus. The larger Leaves are two Inches long, and one broad, or near it; from a small Beginning they become roundish and broader, and then taper into a sharp Point. Some are of an oval Shape, somewhat bent, and irregularly undulated lengthways, depressed in the Middle, with the Extremities rolled backward; they are smooth on both Sides, of a dirty green Colour, somewhat lighter on the Back; where the Nerves being raised pretty much, leave so many Hollows or Furrows on the opposite Side; they are serrated or indented, the Teeth being a little bent, hard, obtuse, and set close together, but of different Sizes; they have one very conspicuous Nerve in the Middle, to which answers a deep Furrow on the other Side. It is branched on each Side into five, six, or seven thin transverse Ribs, of different Lengths, and bent backward near the Edges of the Leaves; some smaller Veins run between the transverse Ribs.

The *Leaves*, when fresh, are destitute of Smell, and are not as the Bark, ungrateful to the Taste, being indeed astringent and bitterish, but not nauseous. They differ in Sub-

stance, Size, and Shape, according to the different Age, Situation, and Nature of the Soil wherein they grow. Were they infused, and drank when they are fresh and green, they would much affect the Body, especially the Hands; for being Narcotic, they would occasion a trembling and convulsive Motion in the Nerves; but they lose this bad Quality in the drying and rolling, which expresses that *clammy, yellowish, acid Juice*, which causes these Tremors; yea, so corrosive sometimes is this Juice, that it excoriates the Hands of the *Roasters* and *Rollers*.

The *Branches* are thick beset with *Flowers*, one or two together, much like our wild *Roses*, an Inch or better in Diameter, having little Smell, composed of six round, hollow *Petala*, or Leaves, standing on a Foot Stalk of an Inch long, which from a slender Beginning, insensibly grow larger, and end in an uncertain Number, commonly five or six, of small, round *Squame*, or Leaves, which serve instead of the *Calix*. These Flowers continue growing till late in the Winter; one or two whereof are generally sick, shrunk, and fall short of the Largeness, and
Beauty

Beauty of the rest; they have a very disagreeable, bitterish Taste, which chiefly affects the *Basis* of the *Tongue*.

Within the *Flower* are many white *Stamina*; exceeding small, as in *Roses*, with yellow Heads shaped like a Heart; in one Flower, there are sometimes an hundred and thirty of these *Stamina*. The Flowers are succeeded by great Plenty of Fruit, which is *unicapsular*, *bicapsular*, but more commonly *tricapsular*, like the Seed Vessels of the *Ricinus*, or *Pulma Christi*, composed of three round *Capsula*, of the Bigness of wild *Plumbs*, grown together to one common Foot Stalk, as to a Center, but distinguished by three pretty deep Partitions; each *Capsula* contains a *Husk*, *Nut*, and *Seeds*. The Nut is almost round on one Side only, where the three *Capsula* grow together, somewhat compressed, covered with a thin, hardish, shining, chefnut-coloured *Shell*, which being crack'd, discovers a reddish *Kernel*, of a firm Substance like *Filberds*, at first of a sweetish, but not very agreeable Taste, which soon grows rougher and bitter, like that of the *Cherry Seeds*, making People spit very plentifully, and very nauseous when they fall

down into the Throat ; but this ill Taste quickly goes off. These Kernels contain a great Quantity of Oil, and often turn rancid, which is the Reason why scarce two of a Dozen will germinate when sown ; this probably may have frustrated our Attempts in *Europe* to raise this Shrub,

C H A P. II.

*Of the Culture, Growth, Gathering, and
Sorting of TEA.*

THE Natives of *Japan* do not allow the *Tea Shrub* any particular Gardens or Fields, but plant it round the Hedges and Borders of their other Fields, with regard to the Soil ; nor do they lay their Seeds in Rows, which would make it grow up into Hedges, but at some Distance from each other, that when the Shrub comes to spread, the growing too close together may not hinder the plucking off the Leaves. They put at least six, but mostly twelve Seeds, as they are contained in their Seed Vessels, into one Hole, made five Inches deep, because few are found to germinate out of that Number ; sometimes two or three Shrubs come up together

gether so closely joined, that the ignorant or less attentive would readily take them for one Stem.

As the *Tea Bushes* rise, the more industrious People fatten the Soil where they grow, once a Year, with proper Manure, mixt with Earth. The Shrub must be at least three Years old before the Leaves are pluckt, and then it bears Plenty of very good ones; in seven Years time, or thereabout, the Shrub rises to a Man's Height; but then it grows but slowly, and bears few Leaves; but if cut down to the Stem, new Sets of Branches and Twigs shoot out thicker, and much more numerous than before, and all nourished by the same Root. The young Shoots, as they come up the first Year from the Stem, are always fewer in Number, but fatter and larger than those which succeed them; in process of Time they become branched.

The *Leaves* are gathered at three different Times; the first is gathered at the Middle of the first Moon preceding the Vernal Equinox, which is the first Month of the *Japanese* Year. The Leaves then are very few, but very tender and young, being only of two

or three Days Growth, and scarce fully opened. These are accounted best, and sold dearest of all, *viz.* from fifty-six to two hundred and forty Crowns *per* Pound. This grows chiefly about *Udſi*, a small Town situated between the Sea and *Miaco*, the capital City, and imperial Seat of the Ecclesiastical Hereditary Emperor of *Japan*, where they are sent to Court under a good Guard of one or two hundred Men, prepared and put up in paper Bags, and these into large *Porcelane Pots*, called *Matſubos*. These Leaves are not gathered by Handfuls, but one by one, that they be not torn, being tender, and not above two or three Days old. Yet one Person that is accustomed to it, will gather ten or twelve Pound a Day; but others not above two or three Pound. This is called *Fieki Tſjaa*, or Ground Tea, because it is ground to Powder, and sipped in hot Water; a Dish of it is sometimes valued at twelve Shillings. This Sort is also called *Udſi Tſjaa*, and *Tacke Sacki Tſjaa*, from *Udſi*, the Place where it grows, whose Soil is very good, and because it's gathered off Shrubs of three Years old, which are then at their greatest Perfection. This is the Tipple of the Imperial

perial Family. Its Shrubs are planted as it were in pleasant Walks on a Mountain, inclosed with Hedges for their Security, and frequently cleansed, that no Dirt may be found on their Leaves. Two or three Weeks before the Labourers begin to gather them, they must abstain from eating Flesh, or any unclean Food, lest the Impurity of their Breath stain the Leaves, or injure their Goodness; and when they are gathering they must bathe themselves twice or thrice a Day, either in a Hot Bath, or River. They must not touch the Leaves with their naked Hands, but gather them with Gloves. This is also called *Voui Bui*, or *Bohea Tea*, of the *Chinese*.

The second Gathering is called *Tootsjau*, or *Chinese Tea*, being prepared after the *Chinese* Manner. This is often sold for the first; therefore the smaller are carefully picked and separated from the larger or coarser Sort of Leaves. The *Tea* Merchants and Shop-keepers of *Japan* divide this into four others, which differ in Goodness and Price. The first Sort of it is gathered when the Leaves just appear, and are unopened; then every young Branch bears not above
two

two or three. This fold from to thirty *Dutch Stivers per Dutch Pound and Quarter*. The Leaves of the second Sort of this are older and more grown, and tho' gathered but a little after the first, the same Quantity of this is sold at forty or forty-five *Stivers*. The Leaves of the third Sort are still older and larger, and worth about from twenty-three to thirty-five *Stivers*. The greatest Quantity of the *Tea* imported into *Europe* is of this Sort, and sold by the *Dutch* at six or seven *Gilders per Pound*. Those who cry it about the Streets in *Japan* sell it for about twenty-four *Stivers per Pound and Quarter*: The Vulgar there drink this.

The third and last Sort is gathered in our *June*; this is most plentiful, the Leaves being come to their full Growth, both as to their Number and Largeness. Many omit the two former, and depend wholly on this Gathering; the Leaves whereof are all sorted into their different Classes of Size and Goodness, called the first, second, and third Sort; the last whereof is coarsest of all, being between two and three Months grown, and falls to the Share of the lowest Rank. It's of this Sort the Labourers gather ten or twelve Pound a Day. This Gathering is called *Ban Tsjaa*,

Tsjaa, and is often too coarse to be dried in Pans over the Fire, after the *Chinese* Manner; but being for the Vulgar, they prepare it any how. The longer this is kept, the better it is; its Virtues being fixt in the gross Leaves, are not so easily lost, either by being exposed to the Air, infused, or boiled; but the other Sorts suffer greatly by any of the three.

C H A P. III.

Of the Preparation of the gathered TEA-LEAF.

WHEN the Leaves are gathered, they are brought to the Work-house to be roasted, the same Day, over a Fire in an iron Pan; for if they lie long, or be laid on large Heaps, or be kept over Night, they would heat, turn black, and lose much of their Virtue; and if they do heat at any Time, they presently fan them, and spread them thin on the Ground to cool them. The *Roasters* put several Pounds of the Leaves into the Pan at once, which is heated, that the Leaves, tho' turgid and juicy, when put in, yet soon crack at the Edges of the Pan: And that they may be thoroughly and
equally

equally dried, the *Roaster* constantly stirs them with his Hands, till they are as hot as he can possibly bear them ; then he takes them out with a Shovel like a Fan, and pours them on a Mat ; then the *Rollers* roll them with the Palms of their Hands, in small Parcels, till they are equally curled ; and such a sharp, yellow, and greenish Juice sweats out of the Leaves upon this rolling, as burns their Hands almost to an intolerable degree : But still they must continue their Work ; for if the Leaves are quite cold before they are rolled, they will either not curl, or not keep it long ; but after they are rolled, the sooner they cool the better, for they keep their Curl the longer ; therefore they have one to fan while another is rolling them. When they are cold, the *Roaster* (who is the chief Master of the Work-house) puts them a second time into the Pans, and roasts them again, till they have lost all their Juice. He stirs them more slowly now than before, lest he put them out of their Curls ; tho' some Leaves will spread in spite of all his Care. After this roasting, they are carefully rolled again the same way. If they are fully dry after this, they have done ; if not,

not, they are delivered a third Time to the *Roaster*. Now his utmost Care and Skill is necessary, lest he burn or blacken them. Some curious Persons roast and roll them six or seven times; but use a slower Fire, that the Leaves may preserve their Greenness; because of that sharp Juice which sweats out of them, the Pan is clean washed after every roasting. The *Chinese*, before they roast their Leaves of the first Gathering, put them into hot Water about half a Minute, that they may sooner, and more fully sweat out that noxious Juice.

When they have done roasting and rolling them, they pour them out on a Mat, and sort them a second time into different Sorts, according to their Goodness, and separate those which are less curled, or too much burnt, from the rest. Country People roast their Leaves in earthen Kettles; and as they are at less Expence this Way, so they can afford them cheaper, tho' very little, if any worse. The *Tea* must be all roasted in the Night, being gathered in the Day; which makes the Preparers of it complain heartily of their bad Fate. When the Leaves have been kept some Months after these Roastings, they

they turn them all out, and roast them again, to take out any remaining Moisture, or what they may since have imbibed.

As soon as the *Tea* is cooled, after this last Roasting and Curling, the *Chinese* put it up in Boxes of coarse *Tin*, which are inclosed in wooden Chests or Cases of Fir, all the Chinks whereof are carefully stopt with Paper, that the Air of those Climates may not dissipate its extream subtile and volatile Parts; and in this Manner it is imported to us. These Tubs or Chests, one with another, contain about a hundred and twelve Pounds of *Tea* a-piece. The common People of *Japan* keep their own *Tea* in large earthen Pots, with narrow Mouths. But the Emperor has his kept in *Matubos*, which is a fine kind of Porcelane Pots or Vessels, wrecked up from among the Sea Rocks, near the Island *Formosa*, where once the rich and flourishing Island *Mauri* stood, which was long ago swallowed up by an Earthquake; here was the best Earth, and the most ingenious People of the World, for making the finest and richest Porcelane. These Vessels thus fished up, are the Emperor's Property, and sold at most extravagant Rates,
viz.

viz. three, four, or five thousand *Thails*, each *Thail* being near equal to five Shillings and ten Pence.

Besides the *Japanese* and *Chinese Tea*, there grows also a rough coarse Sort of Green *Tea* in the Northern Province of *Xensi*, which the hardy *Cannibal Tartars*, the present Masters of *China* use, after their delicate Dish of raw Horse-flesh, when their Dinner sits uneasy on their Stomach. The Infusion of this drunk helps their Digestion, and soon restores their flagg'd Appetite. But as this Leaf is their own, so I believe no body envies them their Tipple, no more than their luscious Repast; for I do not find that is exported.

C H A P. IV.

Promiscuous Observations on the above
CHAPTERS.

I BEG Leave to make these few following *Observations* on the three preceding Chapters.

Obs. I. The Clamminess of both Leaf and Flower of *Tea*, is the Reason 1. That the Shrub is an Evergreen, and stands the coldest

Winters even in *Tartary* itself. 2. The same is the Reason the *Leaf* and *Flower* afford little or no Smell before they are roasted; for the volatile essential Oil or Salts, being wrapped up or entangled in this Juice, are prevented flying off, as in odoriferous Plants and Flowers. 3. The Exudation or Discharge of this Juice by repeated Roastings, leaves the Leaf porous, so that if not close kept in clean Vessels, it would not only lose its own fine Flavour and odoriferous Parts, but imbibe others in their room. Hence *Run-Tea* wrapped up in Paper is generally naught (if ever it was tolerable) having not only lost its own pleasant Flavour, but got a bad one from its being carelessly put up. But even this has its Advantage, as it helps to conceal a double Cheat; for most of what Smugglers import to us from the *Dutch*, is either their *damaged Tea*, which they could neither sell nor use, or it has been slightly infused and drawn in the *Coffee-houses* in *Holland*, and roasted and rolled again. 4. Tho' the roasting does expel a great Part of the clammy Juice, yet it is not so fully exuded, but that those of exquisitely sensible Nerves find still enough of it left to give them

them Uneasiness enough, either by *Tremors*, *Pains*, *Lowness of Spirits*, or diminished Agility of some Parts.

Obs. II. This Juice affecting the Hands of the Workers, and Nerves of the Drinkers, is far from being *narcotic* or *stupifying*, like Opiates, but rather contains an acrid kind of Salt, like that in the *Mexereon* Berries, or *Cantharides*, with this Difference, that as the Salts of *Cantharides* act chiefly on the urinary Passages; so those of *Tea* affect the whole Habit, but chiefly in the Parts where they are most sensible, as in the *Hands*, *Stomach*, &c. Nor does it affect as over Doses of Opiates, by rarifying and encreasing the Blood's Quantity, and relaxing the Solids, but by a kind of *caustic Quality* stimulating the Organs of Sensation. Juice of *Hemlock* indeed stupifies, by its Grossness and Coldness, but is neither corrosive nor excoriating.

Obs. III. The hurtful and deletirious Nature of this Juice before it is roasted, need be no Objection to the Use of it in general, for what is of a more pernicious Nature than *Cassavia Root*, when taken out of the Earth; yet, when its boiled, dried, and ground to

C

Meal,

Meal, what affords a finer and wholsomer Bread? We have many other Instances of the like kind.

Obj. IV. Since this noxious, tenacious, clammy Juice, exudes out of the Leaf by roasting, but not its finer, pleasanter, and useful Parts, we suppose that the first lies chiefly, either in the Interstices of the Fibres and Vessels of the Leaf, or in its larger Juice bearing Vessels; or lastly, is its perspired Matter, the grosser Part whereof adheres to the upper and lower Side of the Leaf, like that clammy Juice on Oak Leaves in a hot dry Summer; and that this clammy Juice being gone, the other Parts are disentangled and set at liberty, expand and spread themselves over the whole Substance of the Leaf, and are easily separated from it; or being set at liberty, they take another and new Form, which they had not before.

Obj. V. The Coarseness and Compactedness of this whole Shrub, shew it to be no tender delicate Plant, but a very hardy one, fit to endure the cold as well as hot Climates, where there is a proper Soil. The like is hinted to us from its being an Evergreen.

Obj.

Obs. VI. Here we have the Reason why it cannot be raised here from the Seed imported to us. 1. Because the Oil of the fresh Kernel turns so quickly rancid in the greatest part of them. 2. Because of the double wasting. 3. Because of the long Voyages between us and *Japan*, *Siam*, or *China*, which may greatly contribute to the Seeds turning rancider.

Obs. VII. The fattening the Soil where the Shrub grows, is not essentially necessary to the Raising or Growth of the Tree, but to the enriching, tendering, bettering, and encreasing the Number, and hastening the early Product of the Leaf, which if gathered before the Plant is three Years old, might mar the Growth of the Shrub, and the tender juicy Leaf shrink up to be not worth Labour.

Obs. VIII. If the Shrub was let stand till it was too old, not only would the Leaves be fewer, but more hard, woody, tough, earthy, have their Flavour impaired, but be heavier to little Purpose.

Obs. IX. The monstrous extravagant Price of the first Sort of *Tea*, gathered in *March*, arises not from the intrinsic Value of it above

the rest, but chiefly from the Labour of its Manuring, the Fewness and Smallness of the Leaves got then, the Ceremony and Formality with which its gathered and prepared, and put up, the Grandeur with which its sent to Court, &c. Therefore the first of the second Sort is as good, except to such as value Things from their Scarcity and excessive high Price.

C H A P. V.

The Commercial History of T E A.

THE *Indians* have used the Infusion of this Leaf above 1200 Years at least, as appears from the Table of their eminent Pagan Saint *Darma*, who flourished about the 519th Year of Christ. He was the third Son of *Kasirwo*, an *Indian* King, and a kind of Pope, being the twenty-eighth Successor of the Holy See of *Siaka*, the Founder of their Paganism, who was a Negro, born 1023 Years before *Christ*. This *Darma* was a most austere Man, who from an Aim at perfect Holiness, resolved to deny himself all Rest, Sleep, and Relaxation of Body, and consecrate his Mind,
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Day and Night, without Intermiffion, to God. After he had watched many Years, being one Day weary, and over-fafted, he unluckily dropt afleep; awaking next Day full of Sorrow for breaking his folemn Vow, he cut off both his Eye-brows, thefe Instruments of his Crime, and with Indignation threw them on the Ground. Returning next Day to the fame Place, behold out of his Eye-brows were grown two beautiful *Tea Shrubs*. *Darma* eating fome of the Leaves, was prefently filled with holy Joy and Strength to purfue his divine Meditations. He prefently communicated to his Difciples what great Benefit he had found from *Tea*, which they publifhed to Mankind. Thus, fay the *Japanefe*, were the Virtues of *Tea* difcovered. The *Fable*, however ridiculous it feems, fhews us, 1. Their long Ufe and great Esteem of *Tea*. 2. Its Serviceablenefs in fome Diforders of the Eyes. 3. Its great Efficacy againft Dullnefs, Drowfinefs, and Wearinefs.

But its Ufe in *Europe* is of much later Date, for it is only about 140 Years fince the *Dutch Eaft-India Company* (who firft imported it, and raifed its Reputation with

us) was founded in 1602, upon a Contribution at their first Settlement of 6,459,840 *Florins*. The *English East-India* Company was formed near the latter End of *Queen Elizabeth's* Reign, their Charter bearing Date in 1599, and their Fleet set out in 1600; but they made no Figure till King *James I.* bestowed his Favours on them. The *French East-India* Company was established in 1664.

The *Dutch* in their second Voyage to *China* carried thither good Store of dried *Sage*, and exchanged every Pound of it for three or four Pound of *Tea*, and extolled our *wonderful European Herb*, and endued it with far more and greater Virtues, than the Leaf of their *Chinese Shrub* could possibly be possessed of; but not exporting so large a Cargo of *Sage* as they imported of *Tea*, they bought a great deal of it in *China* at 8 *d.* or 10 *d.* *per* Pound. When they first brought it to *Paris*, they sold it at 30 *Livres per* Pound, though it was not of the best kind, that being brought from *Japan*, and has often been sold at 100 *Livres per* Pound. About thirty Years ago, the *Chinese* sold it at 3 *d.* and never above 9 *d.* *per* Pound,

Pound, and often mix'd other Herbs with it to encrease its Weight.

Though it seems to have been brought into *England* during the Reign of King *James I.* yet we find little Notice of it before the Usurpation, when it was imported in such large Quantities, that it came under the Cognizance of that Government, for in 1660 a Duty of 8 *d. per* Gallon was laid on the Liquor made and sold in all Coffee-houses (but cannot say whether this was the first Duty laid on it, or only a Renewal of it, in the same, or some other Shape) which was no small Prejudice to the Liquor, and Inconvenience to its Drinkers; for the *Excise Officer* was to survey it before any could be sold, and was not to survey it above once or twice a Day. Ever since that Time, the Duty on *Tea* has been made one of the hereditary Customs to the Crown, though the *Parliament* has, at sundry times, by different Acts, fix'd divers Duties on it, as in those Acts made in the 12th Year of King *Charles II.* and in the 6th of King *William III.* and in the 3d and 7th of Queen *Anne*, and in the 10th of King *George I.* which last, though not the most equitable, yet then thought the most

commodious. Herein an Inland Duty of 4*s.* *per* Pound, was laid on all sorts of it, besides all other Customs, Subsidies and Duties payable to his Majesty for the same, upon Importation. But this heavy Inland Duty (besides all other Duties and Subsidies) being laid on, not according to Value but the Weight, and paid by the first Buyers at the *East-India* House; this, I say, was followed by two Inconveniencies, for the coarsest *Tea* paying the same Duty as the finest, gave such an Excuse for running it in from other Places, and Importers, that no Severity of Law, nor Diligence of the King's Officers, was able wholly to hinder it; whereby the Revenue was greatly diminished, and the fair Trader injured. For what was then run in from other Places, was chiefly the coarsest or damaged, or slightly drawn, dried, and curled again; which being bought abroad at a low Price, and sold cheap here, satisfied not only the lower, but middling sort of People. It also produced another Mischiefe, which was, *Tea* becoming so general and fashionable a Liquor, even by People that knew it not; and the Inland Duty, and other Customs added to the Price of the *Tea*, made it

come at a high Price to ignorant People, that it gave Rise to sophisticating and counterfeiting, as well as staining, dying, and colouring of Tea; till an Act of Parliament was made in 1731 against these Frauds. However, in spite of Law, Order, and Government, these Methods so prevailed, that the Sale of Tea by the *East-India* Company from 1,793,400 lb. in 1731, fell to 584,100 in 1735, till 1739 that they again imported 1,974,600 lb. These growing Inconveniences calling for Redress, in 1745 another Act was made (repealing the former) whereby, besides the former standing Subsidy or Custom of 13 *l.* 18 *s.* 7 *d.* $\frac{1}{2}$ of Importation Duty on every 100 *l.* worth of Tea imported by the *East-India* Company, instead of the former 4 *s.* *per* Pound Weight of Inland Duty, paid by the Buyers at the Sale in the *East-India* House, they were to pay 1 *s.* *per* Pound Duty, and 25 *l.* besides for every 100 *l.* Sterling worth sold there. And further, to prevent running, the *East-India* Company were impowered to import what Quantity of Tea they pleased to supply the Nation; but all Drawbacks formerly allowed, for Encouragement of Exportation, were taken off; for many Frauds had been

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committed that way, by exporting at one Place, and receiving back the Duties in Drawback, and then running it at some other Place of the Kingdom. And in case the Company have not imported Tea enough, they, and they only, are ordered and impowered to buy of our Neighbours, and sell at the *East-India* House, paying the same Subsidy and Duty as for that imported from *India*. Neither has all this Circumspection prevented the running or smuggling of Tea, to the great Loss of the Revenue, and the Injury of both the Company and fair Trader : But whereas Smugglers dealt chiefly before in coarse Teas, now they have of late imported from *France* abundance of fine Tea, and during the War have been so many Priors into all our Measures, Spies upon us, and Intelligencers to the Enemy, whereby many of our Designs have proved abortive. All which, and their Consequences taken together, it may be doubted whether an Encourager of, and Dealer with Smugglers, deserves the Character of an honest Man ; for a good Subject, and a Friend to his Country he is not, who is an Enemy to its Constitution, tramples upon its laudable and necessary Laws,

unavoid-

unavoidably encreases or continues heavy Taxes on its Poor, cramps its Manufactures by lessening their Exports; sending abroad its staple Commodity, by which it must chiefly subsist; being Spies against her for the Enemy in time of War; exporting Coin for Bawbles, and Instruments of Luxury; promoting a Civil War; shedding the Blood of the Defenders of her Laws, defrauding fair Traders, &c.

All *Teas* come from the *East-Indies*, from *Japan*, *China*, and *Siam* chiefly; but the first is most valued, being ordinarily of a fine clear green Colour, having a smaller Leaf, and more delicious Smell and Taste than the other, which raised its Price in *France* to 200 Livres *per* Pound, till a more general Use of *Coffee* and *Chocolate* reduced both its Price, Use, and their Esteem of it. *Teas* are imported by the *East-India* Company only; no private Merchants can import any. It is sold by *Auction* at a *publick Sale* made by the Company's *Directors*, called a *Sale by Candle*, which is their Form of Sale. A Candle is lighted up, and for each *Lot* the highest *Bidder* is the *Buyer*. The *Captains* of the *East-India* Company import yearly 60000 Pound Weight, which is also sold at
the

the same Candle. The Consumers know very little of the *Tea* that they drink. The Words *Green* and *Bohea* comprehend all the low-priced Sorts. The usual Way is to mix one Sort with another, and so bring it to any Price that the Country *Trader* or Consumer pleases to give. Such as buy it at the *India-House*, and have Judgment and Art enough to sell it to the Consumers in Quantities, get handsome Profit by it, as may be seen by comparing the Prices it sold at in the *East-India House* (adding 4*s.* per Pound Duty to the Price it was bought at, for the *Buyer* pay'd the Inland Duty) with the Price it was sold at to Country Chaps, which is at least 15 *per Cent.* besides which they have a second Profit by mixing different Sorts to any Price; and by the Smuggling Trade they reap a third Profit, for the run condemned *Teas* they purchase at a low Price, and mix (if needful) with others; so that should they sell Sugars at, or under *prime Cost*, to get off their *Tea*, a sober industrious Man may raise a very handsome Fortune in no very long time. All the Sorts of *Tea* that have been in use for fourteen Years, with their Names and Quantities yearly imported, you have in the Table.

Teas imported by the <i>East- India Company</i>		Years													
	1729 £.	30	1731	32	33	1734	35	36	37	38	39	1740	41	1742	
Bohea	839200	691000	429700	668100	679000	595500	138000	145700	448600	194900	1461000	552000	633700	932800	
Bing	42500	64000	91600	19400		20500	40700	75700	30100	5000		19100	7500	9000	
Congo	35700		191700	40600	39700	35900	179700	8000	42000	188700		16700		23000	
Chulang	350	1900							600						
Hifoon								4100	20000						
Hyfon	11200		47700	45900	48600	40100	85900	191000	179300	142000	79300	125800	106200	73100	
Couchang								18100							
Hue	400														
Linchifing								600							
Ouchain								29800	8900				16200		
Pekoe	26400		800		26000	22600	48000	7500	14100						
Powkae								19300							
Powtozan			1900		3400	1900	91800	165300	82600	224500	417000	712700	504500	702700	
Single	492400	952000	1030000	790800	26400	3700				13860	17300	22200	9500	20000	
Souchong															
Queen						700									
Yearly Totals	1448150	1708900	1793400	1364800	823100	720900	584100	634300	847100	777860	1974600	146700	1261400	1760600	
Duty	289630	341780	358680	272960	164620	144180	116820	126860	169220	155572	394920	292940	252280	341120	

But the Duty at the *East-India House* now varies with the present Value of the Tea, and so may turn out more when the Commodity is scarcer, and *e contra*.

N. B. Add to this Table, the 60000 lb. Weight imported yearly by the Captains, the Duty whereof was 12000 *l.* Sterling. Besides the Duty of 4 *s.* *per* Pound fixed by Parliament, all Teas brought into *England* pay Custom 13 *l.* 18 *s.* 7 $\frac{1}{2}$ for every 100 *l.* Sterling Value, which is near 1-7th Part; but this fluctuates according to the Price of *Teas*, which is different at different Times.

Not only does the Prices and Sorts of *Tea* vary, but the *Indians* are dextrous in shifting its Colour, Smell, Taste, and Size of the Leaf; they colour *Green* like *Bohea*, and make the last mimick the first. Sometimes the fine *Green Teas* shall have a most fragrant, cordial, reviving Smell and Taste; at other times (as is the present Mode) all good *Tea* shall smell so rank of Soap, that it would make any delicate Person's Stomach peuk that was not fond of Mrs. *Stephens's* Medicine. Neither Smell nor Colour can be altered without some Addition, and for this you must trust both the Humanity and Judgment of the poor *Indians* with your Health and Life. The Size of the Leaf varies, as it is sooner or later gathered, or more or less curled when dried, as we see

fee in the Difference between *Bing* and fine *Hysons*; a Canister that contains 2 lb. of the last, which is young and curled up so close, will scarce hold 1 lb. of the first, which is gathered when the Leaf is old or half dead. Some have imagined that the Eastern Princes and Nobility preferred the *Flower of Tea* to all others, but on better Enquiry, it was found that the Flowers, was the small first pluck'd Flowers of the Leaves of the earliest *Tea*, not above two or three Days old; which being most valued and excellent, was therefore called the *Prince* or *Flower of Tea*, sold then from 45 to 140 Crowns a Pound, or dearer. So that from the different Times of gathering, Degrees of roasting and curling, Ways of its flavouring, the *Preparers*, *Sellers*, and *Buyers*, are determined not to be behind-hand with the *City Taylors*, *Mantua-makers*, and *Milliners*, in often shifting Fashions, suited to the Whim and Humour of the Consumers. *Ex. gr.* What more wretched fainty Stuff, and miserable Tipple, even to the strong and healthy, far more *hysteric* and hipo'd than *Bing Tea*? What more nasty and nauseous Smell than Soap Sudds at your Nose? What more comfortable

able and cordial, than the natural Smell of the finest *Green Teas*?

Omitting the dietetic Uses of *Tea*, it's of great Use considered even in a commercial and social Life, we see what an important Article it is in the Traffick of the *East-India* Company, what a great *Revenue* the Custom and Duty on this seemingly despicable and crumbled Leaf returns to the Crown, which lessens the general Taxes to the Poor. It also occasions a Consumption of our Home Manufactories in Exchange for it; it variously advances the other Branches and Occasions of Trade, its handsome Equipage and all its Concomitants. Then consider the many sober Companies it assembles both in Coffee-houses (which in *London* only are about six hundred) and private Houses. Observe we further the Business, Conversation, and Intelligence it promotes, the Expence and Debauchery it prevents. Nor is its Consumption of Sugar, which is a great Encouragement to our *American Colonies* to be forgot. I say, whoever considers this, and much more that might be said, must conclude, that we are to regard this Leaf, not according to its simple Appearance, nor
scantling

scantling of medicinal, or dietetic Virtues, but the Consequences which flow from it,

C H A P. VI.

Of the Principles of T E A.

THE dried Leaf, as imported to us, contains, 1. *Flegm*, which it had either retained in the roasting, or imbibed from the Air afterward; for by drying a Dram of *Green*, and a Dram of *Bohea*, on different Saucers, before a clear Fire, the first lost 1-30th Part, the last 1-10th Part in a quarter of an Hour, or twenty Minutes; so that all kinds of *Bohea* naturally have more of this than the *Green*, because its gathered while this Principle exceeds its due Proportion, *viz.* before the *Salt*, *Oil*, and *Earth* have been sufficiently dissolved and rarefied by the subterranean and æreal Heat, and fitted to rise up into the Plant, in due Quantity with the *Flegm*. As the Leaf grows, this watery Principle lessens, and the others encrease. 2. An *Oil*, which has sundry Attachments to the Leaf, which loses one Part by being exposed to the open *Air*, or put up in *Paper*, or any spongy Body,

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therefore it is sent to us in *Tin Canisters*. Another Part is drawn off by *Infusion* in cold Water, for two Drams of *Green Tea*, as much *Imperial*, and the like Quantity of *Bohea*, each infused in a Pint of cold Water slowly before a small Fire, the first and last had lost above 1-4th Part, and the middlemost an exact 4th. Another Part of this Oil is extracted by boiling Water; for the two Drams of *Imperial Tea* that had been infused in cold Water, and dried, infused again in three sundry boiling Waters, and then dried, it had lost 3 Grains more, *i. e.* 34 in all, out of 120 *Grains*. The *Green Tea* that had been infused before in cold Water, and dried, being now infused in boiling Water an Hour, and dried again, had lost 16 *Grains* more; *i. e.* 48 *Grains* in all out of 120. But fresh *Green Tea* that had not been used before, infused in several boiling Waters, lost 46 *Grains*; two Drams of *Bohea Tea* treated in the same Manner, and dried again, had lost 48 *Grains*; 112 *Grains* of *Hyson Tea* thus infused and dried, lost 42 *Grains*; 112 *Grains* of all those *Teas* that had been thus infused and dried, had a Point of boiling Water poured on them,

them, and let stand 24 Hours; then poured off, and fresh put on, and shifted again, till green *Copperas* would no longer change the Colour of the Waters, then the Leaves taken out and dried slowly, had lost only 9 Grains; *i. e.* near 1-12th Part; and 103 Grains were left. Another Part is drawn out by boiling in Water over an open Fire; thus the last 103 Grains boiled in a Pint and an half of Water to half a Pint, and the Operation was repeated six or seven times; then the Leaf was taken out and dried, and it had lost some Grains. There is still another Sort that cannot be extracted by watery Vehicles, but must have rectified Spirits. Thus 22 Grains of dried *Pekoe Tea*, that had been infused and boiled in fundry Waters, infused in *rectified Spirits*, and then dried, had lost 2 Grains; 112 Grains of *Bohea Tea*, that had been used before, lost 7 Grains in Spirits. There is still another Part, which is only separable by an open Fire; for 2 Drams of the above *Teas* (that had been infused in cold Water, boiling Water, boiled and infused in Spirits) being put in a Crucible, set in a clear Fire, and slightly covered with an Iron Plate;

the *Tea* first sent out a very thick blue Smoak, and then a clear Flame; a deal of black tough Oil hung on the Underside of the Plate; it tasted exceeding rough and bitter: So that the *Oil of Tea* consists of *light separable Earth and Oil*, which constitute a *Gum*. Eighty Grains of *Hyson Tea*, as much *Green*, and as much *Pekoe*, put into different *Phial Glassses*, and two Ounces of *Spirit of Wine* poured on each, and all set some Hours before the Fire, then removed into a cold Place, and let stand seven Days more. The like Weight of these *Teas* put into three Phials, and the same Quantity of *Spirits* poured on each of them; then removed quickly into a cold Place, and let stand as many Days as the first had done, both in the Heat and Cold; then the *Spirits* poured out of all the six Glassses, and the Leaves taken out and dried. The *Hyson*, in the first, had lost 26 Grains, the *Pekoe* 24 Grains, the *Green Tea* 27 Grains. The *Spirits* left to exhale slowly in a small Heat, left very near the same Weight. Of these, in the cold Infusion, the *Green* lost 14 Grains, the *Hyson* 14 Grains, of a very bitter, astringent, delicate tasted Green Gum;
the

the *Pekoe* 12 Grains. The Spirits exhaled left the same Weights again: So that warm Infusion draws out near double of the cold, but both Tincture and Gum of the last is infinitely pleasanter and beautifuller than the first; and the dried Leaves were clear and sparkled, as tho' covered with some Vernice. These infused in several boiling Waters, till *Copperas* would tincture the Liquor no longer, then dried and weighed, *Hyson* weighed 38 Grains, the *Pekoe* 37 Grains, the *Green* 38. This Gum is partly dissolvable in Water, and partly inflammable by the Fire; for a little of that extracted by Spirits, put into cold Water, and set before the Fire, a great part of it dissolved quickly, and tintured the Water green, turning it exceeding bitter and astringent. Six Grains of it laid on a hot Fire-shovel, it quickly flow'd, burnt in a Flame, and left a little white Ash.

Tea contains a *Salt*, but it is chiefly fixed when it comes to us; for two Drams of *Tea* that had been fully infused and boiled, was burnt, and the white Ashes put into its Infusions and Decoctions, and all evaporated slowly to Dryness. Water poured on

the *Residuum*, and filter'd twice, then the Earth well dried weigh'd 36 *Grains*. The filter'd Liquor being slowly exhale'd, left 8 *Grains* of an exceeding brackish Salt, which would not ferment with Acids.

So that we see the Parts of *Tea* are separable into, 1. A peculiar *yellow*, noxious *Juice*, which evaporates in roasting. 2. A thin Oil, which is dissipat'd, either by lying long in the open Air, or by Infusion in cold Water. 3. A Semi *balsamick Liquor*, somewhat grosser than the last. 4. A thick and black *resinous Oil*. 5. A little *Resin*, friable in the Cold, and inflammable by Fire, but not dissolvable by Water. 6. A *Gum* consisting of more Mucus than Oil, therefore dissolvable in Water, or combustible in the Fire. These are the different Sortments of the Oil of the Leaf; for the Flowers and Seeds we have had no Opportunity to examine them, nor are they in use. 7. A *fix'd Salt*. 8. Earth. — The different Proportions of these Parts, as near as I could compute, are, *Bohea Tea* contains 1-10th Phlegm, or other volatile Parts; *Green Tea* 1-30th Part. Fix'd Earth is about 1-3d of both, only *Green Tea* has a little more than *Bohea*.

Green

Green Tea has a 15th Part Salt, *Bohea Tea* 1-15 $\frac{1}{3}$ th. The Oil and lighter Earth, lost by Decoction and Evaporation of the filtered Liquor, are 8-13ths of the whole. But in making of *Tea*, the Parts obtained from the Leaf is different in different Waters; for two Drams of *Green Tea* infused two Hours in boiling River Water, then the Water poured off, and more put on, and repeated a third time; then the Leaves carefully and slowly dried, had lost 2-5ths. Rain Water left it lighter, &c.

C H A P. VII.

How T E A is used, and of the other Ingredients.

T H E R E are sundry Ways of making *Tea*, the *Tartars* boil it in *Milk*, which seems to be ill judged: For, 1. *Milk* either blunts, or sheaths up the more minute, oily, or saline Particles of the *Tea*, therefore *cachectic* and *leucophlegmatic* Persons should neither boil it in *Milk*, nor use *Cream* to it, for all Stimulation from the Liquor is hereby prevented, instead whereof it softens and lubricates. 2. The boiling of *Milk*.

carries off its more watery, small, and balsamick Parts, and leaves the more gross, earthy, and nauseous behind, to stuff obstructed Vessels more. 3. The thinner Parts of the *Milk* being lost, the Vehicle is more unfit to insinuate itself into the Leaves, and dissolve and fetch out these delicate Principles, many whereof lie still wrapt up in the fixed Parts.—The *Japanese* powder the Leaves of their first, or finest early *Tea*, and pour boiling Water on them, and so sip up both together; by this means they have a thick, muddy, instead of a clear Liquor: Besides, the Substance of the Leaf being astringent, if drunk by Persons of too stiff Vessels, this may add to the Rigidity. The Taste must also be more rough, harsh, earthy, and disagreeable.—The *Chinese* make their *Tea* as we do, by infusing it in boiling Water; but when they have drunk the Liquor, they often prepare the Leaves for an Evening Sallad with *Sugar*, *Oil*, and *Vinegar*.—Formerly, in *England*, when they had breakfasted on *Tea*, they boiled the Leaves, strained the Liquor, and drunk it to their Afternoon drinking. Some now infuse their *Tea* in *boiled Milk* instead of
Water,

Water, which is exceeding nourishing (especially if 'tis *Bohea*) and well adopted for consumptive, thin, and hectic Persons, or that have Coughs, or profuse draining Ulcers, or an acrid Humour in their Blood; if it goes off their Stomach as well.—Some, when they make *Tea*, pour all the first Liquor out of the Pot, before they pour on more, which is a very bad way; for thus all the delicate Flavour of the Leaf goes off in the first Pot, and what follows has the Roughness without the Flavour: But it were better to pour out a little *Tea* into each Cup (where there is a Company) then fill up the Pot with Water, and fill up the Dishes; never pour out above half the Liquor in the Pot till it is fill'd again; so some of the Flavour will remain to the last.—But a better way still, and which will make the whole *Tea* to be drank equally fine and pleasant tasted, is to put the *Tea* into a large Pot at first, fill it up with Water when it has stood a little; fill every Cup a third part, or half full, out of the Pot; then fill them up out of the *Tea-Kettle* of Water; thus will the last Cup of the *Tea* have the same Flavour with the first, only rougher,

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having

having drawn out more of the earthy Parts by standing longer.—The Sort of *Tea* made is also to be considered, for the smallest and hardest curled requires double time to stand, than the less curled, spongy, large Leaves do, after the Water is poured on, till its put out into the Cups. Hence *Hyson Tea* will bear double the time for the Water to stand on, and double the Infusions of Water that *Imperial Tea* would.—The Choice of proper Water is a great Article in making good *Tea*; the softest and purest is always best, which is thus known; it gives the *Tea* the finest Tincture and Flavour, tastes not rough, hard, and disagreeable, but soft and pleasant: Hence soft Water and a coarse *Tea*, will make a finer Liquor than hard Water and a fine *Tea*. From many Experiments I find, that different Waters make very great Difference in both Quantity and Parts of the *Tea* extracted by Infusion.

Water being that wherewith *Tea* is commonly made, it behoves us to see that it be good, not only because bad Water both spoils and wastes good *Tea*, but because we ought to regard our own Health in seeking for good; for if bad, it will necessarily occasion

caſion and leave ſome Taint in our Juices and Veſſels. Beſides, we often expect as much from the Water as from the *Tea*; and I think it has been ſufficiently proven, that good Water in general, of all other Liquors, quenches the thirſt of healthy People beſt. 2. That good Water, of all other Liquors, promotes a true nutritious and healthy Diſteſtion beſt in general. 3. That of all other Liquors it beſt compenſates the Loſs we continually ſuſtain of the moiſt and watery part of our Blood, and neceſſary Juices, whiſt in Health. 4. That the ordinary uſe of this in the Youth and Manhood of healthy Perſons, is the likeliſt and moſt proven Tipple to attain a long, uſeful, and comfortable Life, Water conſidered in a dietetick Light.

C H A P. VIII.

Who, when, and how to uſe T E A.

WE conſider not *Tea* in a medicinal but a dietetick Light, in this Diſcourſe; therefore we judge it an improper Diet for Infants; for if drank ſmall, the warm Water will relax their Habits quite too

too much ; if drank strong, it may affect their tender Nerves, which differ so little from a Fluid ; it will pall their Stomach and Digestion. It must also either be drank without *Sugar*, or with it ; if the first, it both relaxes and rakes their delicate Bodies ; if the last, *Sugar*, if fine, is a Salt, and may dry too much, wear their Vessels, heat and cause Thirst ; if coarse, such Quantities taken so often, of an oily Substance, may leave some Lensor on the Vessels, and cause some Siziness or Toughness in the glandular Juices especially, and leave Obstructions ; or its Oil may occasion Sharpness in the Blood, or Lymph.—Nor do I think it advisable for the more grown up, either to drink it too often, or in great Quantities at a time ; for though it may seem to agree well for some Years, yet it may produce its Effects afterwards, more rivited in the Constitution, and harder to be extirpated. Hence we often see the bad Effects of it in the Fair Sex especially, who use but little Exercise, and deny themselves a frequent Glass of Red Wine, how faint, pale, relaxed, low-spirited, and leucophlegmatic they often are, and how many Complaints we hear of Tremors

mors and Pains in the other Sex, from an indiscreet Use of it: For, if the best and safest Things are abused, they not only may, but often do harm. Gross corpulent People, and the Flegmatic, and such whose Blood is too thin and watery, ought either not to drink it at all, or in small Quantity, and strong.—Such as use Exercise, or a cheerful Glass at Night, may beneficially drink more of it than others, if it agree with them; *i. e.* leaves no sensible bad Effects on them. A moist, thick, cloudy, foggy Air, a marshy Situation, require both *Green Tea*, and to be drank stronger and sparingly; the same do Pot Companions and Ale Tipplers, to open the Ureters, and help off with their daily Load. But such as are much weakened and emaciated, and just recovering from sore acute Diseases, have nothing to do with it; they require more nourishing things.—Such as use little Exercise, and live temperately, should not drink it above once a Day, either to Breakfast, or Afternoon; the Intemperate may have it oftener and stronger.—Nor is it a Liquor fitted for the use of a very hot Season, to be used too liberally, as it relaxes the Stomach
and

and whole Habit more, and promotes the Discharge of the thinner Parts of the Blood, often sufficiently drained off by the Heat of the Weather.—And what still tends to make its Use injurious, where it really would not, is the Custom of drinking it with *Drams, volatile Spirits, and Cordial Tinctures*; for as these are often called in upon the immoderate use of it, so they hasten on the Ruin of the unhappy Tipplers, who either thereby get into a Habit of Dramming, or are so dejected and dispirited, that they must every now and then be obliged to repeat their favourite Cordial Drops. But more of this afterward.

C H A P. IX.

Of the Effects and Virtues of T E A.

THIS *Leaf*, like all other Things, has met with various Treatment, according to the different Tastes, Humours, and Prejudices of Mankind. Some have ascribed to it such sovereign healing Virtues, as tho' it were not only capable to extirpate and prevent the Cause of all Diseases, but even almost to raise up, and restore those
that

that are come to their last agonizing Moments; and extol it to a Degree that renders their Panegyrick too near a-kin to a Satyr. Others are no less severe in their Censures and Declamations, and impute the most pernicious Consequences to it, accounting it no better than a slow, but efficacious Poison, and a Seminary of Diseases. And tho' its good Effects in some Diseases are too glaring to be denied, yet such roundly affirm these to be the Effect of the warm Water, without ever trying whether warm Water alone will have that Efficacy, without causing Nausea, Vomiting, palling of the Appetite, and Faintness, or even with these Inconveniencies. They are so hurried by their Prejudices, that they will not indulge themselves the Liberty they would use in other Cases, *viz.* to consider the Difference between the moderate, seasonable, and discreet use of a proper Tea, and the excessive and unseasonable use of an unsuitable Sort. Or whether the Mischiefs alledged, come from *Tea* drank in the common Way, or from Freedom with *Drams, Spirits, and Cordials*, or Neglect of necessary *Exercise* and Labour, or indulging a

too

too plentiful, nice Diet ; or of Intemperance, Raking, or Intriguing : Whereas if these were narrowly scann'd into, there would be just as much Reason to blame the *Bread* and *Cheese* they eat when Children, or their dressing Miss *Dolly*. Or if they are pinched in the Argument, that it has, and may still do Service, they then say, we run the Hazard of an Infection with foreign and worse Diseases, which lie secret and hid in the imported Leaf ; as tho', the same Objection did not lie against the Sugar used with it, and all other Things imported either for Food or Physick, and with a great deal more Justice, for several Reasons. And to strengthen their Cause, they hale all in for Votaries on their Side, who give us but necessary Cautions against an excessive, unseasonable, and improper Use of it ; than which nothing can be more unfair, and a greater Sign of a desperate forlorn Cause. But not venting themselves against the Plant, they basely turn their virulent Pen against the *Importers*, treating them in a manner that deserves Contempt.

Others go more sily to work, and will have the Virtues of *Tea* to be industriously magnified

magnified for the Interest of the *Importers*. But what Profit can private Persons have, by attempting to put a Cheat upon the World, that if it takes, they can be no Gainers by the Bargain ; if it does not, they must expect to be laughed at and slighted. Nor is it supposable, that Gentlemen of Learning and Ingenuity, do recommend it from any other Motive, but that of Benevolence and Love for their fellow Creatures.— The other Extream is also blameable, when *Tea* is extolled so immoderately and imméritedly, as if all the other whole Classes of alterative Vegetables had either been made in vain, or to recommend the superior Excellency of *Tea* ; for indeed all the other Classes viewed in a medical Light, afford better Assistances from Vegetables than *Tea*. I own there is one Advantage got, by the late common Use of it, which is, that the Vulgar have learned a more easy and expeditious way of drawing Infusions from other proper Plants in a great many Cases, as *Stomachics*, *Emenagogues*, *Pectorals*, *Febrifuges*, which they were obliged to the Apothecaries Care for before : For the *European* World was far from being created

destitute of Plants, more proper than this, to ease and aid the Complaints and Diseases of its Inhabitants, if their Virtues were well and generally known; and I heartily wish that this may prove a happy Prelude and Incitement to the further Examination and Study of our own Simples; an Enquiry that would promise the greatest Service to Mankind; for what we have of this Kind, is purely owing to the Ancients; and instead of improving and extending it, we have in a great measure neglected it; and instead of finding out their Uses, we study to run them out into curious, endless, unprofitable Divisions.

But allowing all the Virtues ascribed to *Tea* to be just, yet we may be easily disappointed of its expected Efficacy several Ways, as 1. When we are not proper Judges of it, and so have that which is *damaged*, *drawn*, or *adulterated* palmed upon us, for that which is good and genuine. 2. By ignorantly preferring that Sort which may be improper in our Case or Constitution; as drinking *Green*, which is *diuretick* and *cleansing*, instead of *Bohea*, which is more *softening*, *smoothing*, *healing*, and *balsamick*;

mick ; or using *Imperial* for *Hyson* ; or the
 last for common, &c. 3. By infusing or
 drinking it in an improper Liquor, as saline
 or spirituous, instead of Water. 4. Or by
 using an unsuitable Liquor of the same kind,
 as *Snow*, *Ice*, *earthy*, *stagnant*, or *metallick*
Waters, instead of soft, smooth, pure *Wa-*
ter. 5. By drinking to Excess, and at un-
 seasonable Times, or of an improper Strength,
 as strong when it should be small, and small
 for strong. 6. When by long, unnecessary
 and too frequent Use, we have familiarized
 it to us, that it will not answer our Inten-
 tion to that Degree. 7. When we take not
 care to keep it close, clean, and pure. 8.
 When the Water is either boiled too much,
 or in an unfit Vessel, or over a smoaky, or
 other bad Fire. Nor, lastly, can we reason-
 ably expect that either the same Medicine
 or Diet should always have the same Effect,
 in all Ages, Sexes, Constitutions, Seasons,
 and Ways of Life, especially when long Use
 has inured it to us. Nor are we to ima-
 gine it to be of so powerful a Nature, as,
 like a *Charm*, to cure in the Height of a
 Distemper, or root out that which is be-
 come habitual by long Continuance. It is

no wonder that we meet with so many Complaints, but it is wonderful we find no more from the present excessive use of *Tea*, as the drinking it three or four times a day, six, seven, or eight Dishes at a time, as is too often the Custom of some, who yet use little Exercise after it. This must be so far from preventing or curing Diseases, that it is no Surprise to see such look pale, and hear them complain of Low-spiritedness, the true Effects of a lax Fibre, and poor watery Blood, occasioned by swilling down so much warm watery Liquor; and this is as great a Recommendation of the *Asiatic Leaf*, as any modest Man will venture to give it; for let them drink but half as much warm Water without the *Tea*, and we should see the shocking Effects of it. Here *Gentlemen* have no room to find fault with the *Ladies*, when they at present too often swill down far greater Quantities of more injurious Liquors, *viz.* warm *Negas* and hot *Punch*, which would far sooner bring greater Evils on them, did not more Exercise, now and then the use of Red Wine, &c. prevent it.

Probably

Probably one Reason that has occasioned such different Sentiments concerning *Tea*, is, that tho' several Authors have wrote on it, yet they have neither enquired into its *Principles*, nor applied these to the *Blood*, *Juices*, and *Solids* of the human Body, but taken both upon Trust, to save themselves the Trouble of Examination, without which they were to expect no Certainty as to its Virtues and Properties. To prevent therefore our implicitly following such Guides, we took the above separated Principles of *Tea*, and found that all its Infusions, of a moderate Strength, were restraining; and that the greater or lesser Degree of their Restrictingency, is in proportion to the Strength or Weakness of the Liquor drunk, and the Springiness or Laxness of the Drinkers Fibres. But tho' the Infusions of all the *Teas* have an Astringency, yet some have it in a more eminent Degree than others, for the *Boheas* have it in a lower than the *Greens*; common *Green* has it more than *Hyson*; which is the Reason that where *bracing* and cleansing (Detergents) are wanting, common *Green* is best; where more smooth and lubricating, *Bohea*

challenges the Preference. Where a delicate Flavour, and moderate Degree of bracing is wanted, *Hyson* and fine *Green Tea* are fittest. The Salt of *Tea* dissolves the Blood; its Earth neither attenuates nor thickens it; its *Oil* thickens a little; its *Gum* very much, whether extracted in a watery, or a spirituous Liquor; its *Oil* and *Earth* united, extremely contract our Fibres. All these Properties some affirm to be local, and do not hold when brought out of *Asia*; a monstrous Assertion! We find other Vegetables, when exported from their native Soil, answer the same Purposes here; and what should hinder this, it were to be wished they had explained, if they could. Now for some of the more particular Uses of *Tea*. It is of Service in Disorders of the *Head*, from cold and sluggish Causes, which so alter the Mass of Blood and Lymph, that they have not a free Course through the Vessels of the Brain, but adhering to their Insides, either shorten or shut up their Diameters; such is fizy, thick, flegmatic Disposition of the whole Mass of Blood, which when it arrives at the small and tender Vessels of the Brain, their inherent Force

not

not being equal to the Strength necessary to propel viscid Fluids along their Canals, its Motion is therefore slow; but the quickest Motion being always in the *Axis* of the Vessels, from the repulsive Collision or Resistance of the Sides; and the most fluid Parts of the Blood being susceptible of the greatest Motion, these must therefore be chiefly propelled; while the viscid Parts less fit for Motion, as they consist of grosser, less prepared, and more attractive, or adhesive Particles, give the greatest Resistance to the Action of the Solids and Vessels, and lie nearest their Sides, which being weakened, soak'd in Moisture, and become over slippery, have not Force to shake them off, and throw them into the middle of the Vessel; therefore they first move slowly, then lie still and stick to the Sides of the Vessels, where they attract other Particles of the like Nature, till they shut up the Vessel, and prevent the Motion of the Blood or Lymph.—In this case *Green Tea*, of a proper Strength, is a good Diluter, for the Water thins; the Salts separate the sluggish Lymph, stimulate and invigorate the Vessels, encrease the Blood's Motion; its Earth

and Oil, brace up the lax unspringy Vessels, and dispose the slimy Matter to be thrown back into the circulating Mass, thereby widen the narrow'd, and open the half shut up Cells of the Brain. The Fluids thus disposed for Motion, and the Vessels for Action, the Cohesions of the first will be broken and expelled by proper Outlets. The Blood being thus thinned, it is fitter to pass all the Turnings and Windings of the Brain, and have its nervous Juice strained off in greater Plenty, to invigorate the whole Vessels of the Body; so will they and the Muscles do their Office more effectually, with more Ease and Speed, for a longer time; and a beginning Heaviness, Dulness, Drowsiness, Lethargy or Coma prevented, or set further off. This Liquor is also a proper Diet in a threatened Apoplexy, from these Causes, when a Person of a sudden becomes uncommonly dull, idle, lazy, sleepy, averse to Exercise or Motion, belches up Phlegm at times; have pale, moist, dim, full Eyes; their Head swims; they breath uneasily after stirring; they have often Tremors, Snortings, and are haggard, \ All these Premonitors of a Lethargy,

thargy, come either from a lax Fibre and sluggish Blood, or by too great Freedom with unripe Fruits, mealy Foods, Neglect of necessary Motion, or a great Waste of the thinner Parts of the Blood, or want of good Blood, or Bile; or a Retention of the thick Parts of the Blood and Humours, or their cleaving to the Infides of the weak and lax Vessels.—*Green Tea* is no bad Tiptle in the above Diseases, *viz.* Lethargies, Apoplexies, Head-achs, &c. from the sticking of the thicker Parts of the grumous Blood to the Infides of the Vessels; for should these Parts stick long to the Vessels, they might produce polypous Concretions, either in the Head, Heart, or great Arteries; for *Tea* dissolves these grumous Adhesions, hinder their Concretions, cleanses the Vessels, encreases their Force and Action, and restores a due Commixture of the different Parts of the Blood; but Exercise must necessarily attend the use of this Diet.

I would also recommend it in inflammatory Thicknesses of the Blood, discoverable by a sharp, constant Feverishness, an obstinate great inflammatory Pain of the Head,
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with Redness, Fulness, and Inflammation of the Eyes. Here small *Green Tea* drank freely, after plentiful Bleeding, thins the Blood, lessens its Resistance against the Vessels, causes it to move more easily, mix better, afford more animal Juices, and disposes it for Nourishment and Evacuation, *i. e.* it brings the mutual Resistance of Solids and Fluids nearer to a Balance, as all these Symptoms arise from an encreased Circulation of the Blood, in proportion to its Consistence, which is too thick. But the sluggish, or rather overpowered Vessels, being roused and strengthened by this Liquor, and the Blood thin'd, and better fitted for Circulation; Secretions and Evacuations, the Balance of Nature, is brought nearer, and the Body relieved.—In a *Vertigo*, or Swimming of the Head, *Green Tea* drank (not too strong) once or twice a Day, after bleeding and vomiting, (if indicated) will be useful in relieving the Person, because it is of a thinning, cleansing, rousing, and bracing Nature, as we shew'd from the Effects of its Principles and Composition.

What should mightily recommend the use of *Tea* to Gentlemen of a sprightly Genius,

Genius, who would preserve the Continuance of their lively and distinct Ideas, is its eminent and unequalled Power to take off, or prevent Drowsiness and Dulness, Damps and Clouds on the Brain, and intellectual Faculties. It begets a watchful Briskness, dispels Heaviness; it keeps the Eyes wakeful, the Head clear, animates the intellectual Powers, maintains or raises lively Ideas, excites and sharpeneth the Thoughts, gives fresh Vigour and Force to Invention, awakens the Senses, and clears the Mind; perhaps because by its thinning the Blood, cleansing and clearing the Glands of the Brain, it encreases the Secretion and Distribution of animal Juices, which compensate the preceding Loss of Spirits, whether spent before on the bodily or intellectual Organs. It invigorates the Fibres and Vessels afresh, takes off that Laxness and Sluggishness which called to Sleep. Evacuations by the Skin and Kidneys are duly and regularly carried on at the same time; so that the Body is soon freed from those superfluous Juices which made it dull and indisposed. And as it thus promotes a free Circulation, gently cleanses and comforts
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the Brain; that there is no Load, slow Circulation or Stoppage in any of its Vessels and Glands; therefore it frees from frightful Dreams, Incubus, or Hag-riding, except the Stomach is loaded with animal, or other Food of hard Digestion, at going to Bed, which may compress the descending Trunk of the great Artery, whereby the Blood is sent up to the Head in greater Surges, fills the Vessels, and disturbs Circulation. And as Pains of the Head and Megrims owe their Rise either to a Fulness of the Vessels with gross fizy Blood, or to a Distention with an inflammatory Liquor; so that which thins the first, and promotes the Preparation and Secretion of both, is serviceable in these Cases; and the use of *Green Tea* once or twice a Day, will contribute to this, if not too strong, to cause a Stimulation. But to prevent both this and terrifying Dreams at once, it is properest in the Afternoon, but not too late, lest it hinder Sleep.—*Tea* is also useful in several Disorders of the Eyes, as Weakness, Dimness of Sight, Redness, involuntary Tears, &c. from a Fulness of the Glands, stretching of the Vessels, and squeezing forth of the Humours,

mours, or from an Increase and Thickening of the Coats and Humours, or a lodging of some Siziness in the small Vessels, and their distending and pressing on the Nerves of Sight, and lessening or hindering their Communication with the Brain, whereby they pine and close ; or from a meer Fulness of the Vessels, wherein the thinner Parts are strained off, and the thicker left behind. In all these a Diet of *Tea* is proper, for it moistens the stiff, rouzes the lax and stretched Vessels, thins the Blood, corrects the sharp Humours, and braces the Nerves and Muscles, so as they shake off their almost stagnant Juices. But for a Laxness and Stretching of the Glands and Coats, it should be drank strong ; in the other Cases small. It has also been found of use in Deafness, from a Relaxation of the Drum of the Ear, from an Afflux of pituitous Humours on the Vessels or their Membranes.

It is of good Use in Rheums or Catarrhs, whether of the Nose, Throat, or Breast. For these Diseases being a Defluxion of sharp Serum from the Glands about the Head and Throat, are often the Effects of a Cold caught ; for then what should go off
by

by the Skin, being retained, falls upon these Glands, and irritating them, causes a Sneezing, running of the Nose, or a Cough, &c. or a Catarrh may be from too much Serum either in the whole Body, or in these Parts; or from a natural Laxness of the Coats of the Glands, or a greater Flux of Humours to, or a slower Motion of the Blood about the Head; for the Glands there, and of the Throat, are the most susceptible of this encreased Quantity of Serum, because they are provided with the least Helps either to resist or throw it off. For this Reason such as have this Serum much encreased, are dull and inactive; for the Vessels of the Brain being weak and dilat-able, will sustain a great Share of the Load which stretches the Blood-Vessels, and compresses the Roots of the Nerves; hence less nervous Juice, and the Influx of that into the Nerves is also diminished, the Muscles become resty, sluggish and inactive: But the Spirits being detained in the Brain, cause Anxiety, Restlessness, shorter disturbed Sleep; and being sent off into the Nerves of involuntary Motion, the Heart is invigorated, the Action of its Muscles is encreased;

creased ; hence a quick Pulse and Heat. But *Green Tea* drank small and freely, with now and then a little Spirit of Hartshorn, and keeping warm, answers all the Intentions necessary in a Catarrh, after Evacuations, if needful.

Where Perspiration is too great, the Force of the Fibres and Vessels too strong, the Circulation rapid, the Blood ground down, and the Body always lean and thin, *Bohea Tea* is very beneficial, for it furnishes a smoothing, softening, and relaxing Principle to the Fibres and Vessels, prevents or diminishes their too great Springiness, Dryness, and Hardiness ; lessens the immoderate Expence of the Juices by the Skin ; the Solids act not with such Force and Celerity. Hence the Blood moves more evenly and easily, is not so ground down, and nourishes the Body better. In spitting of Blood, either from the Delicacy or Tenderness of the Vessels of the Lungs, or the Force, quick Motion, or Sharpness of the Humours. Here, after due Bleeding, and Endeavours to reunite the ruptured Vessels, the Rapidity, Heat, and Sharpness of the Humours are to be corrected by Emollients and Balsamicks,

micks. Here the dietetic Use of *Bohea Tea* is adviseable, as it answers all the above Intentions, if drank with *Cream*, coarse *Sugar*, &c.—In Abscesses of the Lungs, with Difficulty of Breathing, a dry thick Cough, after eating, or Motion especially; frequent Hectic Fits, great Anxiety toward the Evening, and Night Sweats; *Bohea Tea*, used as above, may prevent the Increase of the Abscess or Ulcer, defend the Blood from the Injury of the purulent Matter mixing with it. Its vulnerary and balsamick Parts correct and soften the sharp Humours, and hinder their Putrefaction so speedily, and helps to determine them to the Kidneys, and makes Spitting easier. — In Obstructions of the Lungs from Siziness of the Humours, from too great Heat and Motion, or use of spirituous Liquors, profuse Sweats, Colds, or striking in of Eruptions of the Skin; all which encrease the Heat, Quantity, Motion, and Sharpness of the Humours, that are pressed together, adhere with a larger Surface, and have too large Globules to pass the small Vessels. Here, after Bleeding and Laxatives, *Bohea Tea* of a middling Strength, drank as above,

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is serviceable ; as it is also in a violent laborious Cough, which tears at least the Mucus from the Insides of the Wind-pipe, whereby it is soon irritated by the Cold, or by the Sharpness of the glandular Liquor separated there. In Inflammations of the Sides or Lungs, from a Fulness of the Vessels of those Parts, with a fizy Blood, such as cannot use *Linseed*, or *Mallow Tea*, may profitably substitute *Bohea*. Thus I have thrown several of the chief Uses of *Bohea Tea* together ; to which might be added other internal Ulcers, as of the Stomach, Kidnies, Bladder, &c.

Having in these few preceding Instances shewn the Effects of *Tea* both on Solids and Fluids, I shall avoid Repetitions in what follows. It is also good in Obstructions of the Lungs, arising from the Viscidity of the Humours from their too slow Motion, known from a soft, flaccid Habit of Body, weak, slow Pulse, a languid Circulation, pale Urine, and no Thirst. Here pretty strong *Green Tea* is best ; as it is also in want of Appetite and Digestion, from much Slime lying in the Stomach, or a languid Action of its muscular Coats, or want

of proper Juice to invigorate the Nerves, or from loading it with Food of hard Digestion ; or from melancholy Sharpness lodged in it. Many chronic Diseases arise from a Diminution of Digestion in the first, second, and third rate Powers ; how many Diseases then may not a moderate Use of *Green Tea* exempt us from. In Surfeits, whether from Wine or Malt Liquors, which have left much Slime on the Stomach, or acrimonious Particles in it, or the Bowels, or Brain ; or too great a Quantity has been poured down ; hence Pain, or Smimming of the Head, Dulness, Heaviness, Belching, and Oppression of the Body, Fulness, and Loathing of Food. In all these Disorders from Surfeits, the good Effects of *Green Tea* is no less sensible than visible.

In tender Stomachs, which either from Thinness, or the Loss of the mucous Coat of the Stomach, by Spirituous Liquors, &c. for the exquisite Sensibility of the nervous Coat, can bear no other Vomit but *Green Tea* drank freely, quickly, and pretty strong without Sugar, and yet answers well, as in Infants, Women with Child, &c. In flatulent Cholicks, from a Laxness, or diminished

nished Tone of the muscular Coats of the Guts, whereby some of the more gross and tenacious Parts of the perspirable Matter lies rarified in the Bowels, distends their Coats, turns sharp, and pricks the Intestines, the Use of *Green Tea*, drank pretty strong, is adviseable; as is small *Tea* in bilious Cholicks; though Chicken Broth is better. It is also good drank with Honey, in gravelly Pains, from small Stones, Sand, or mucilaginous Matter collected in the urinary Passages. Nor is *Tea* useless in several sorts of Obstructions in the Liver, Spleen, Pancreas, &c. for it thins the Blood, resolves the close compacted, and wedged in obstructed Matter; loosens and opens its Cohesions, encreases the decayed Tone of the Vessels, opens their narrowed Mouths to the circulating Mass. In Hippo and Hysterics, *Tea* is good, if it agree with the Constitution, and not drank too late to prevent Sleep, the chief thing wanted in the first. And to abundance of People we see it a good Cordial, cheers, revives, and raises their Spirits, makes the Body light and lively, dispels those Clouds and Drowsiness which generally attend a lax Fibre, a lan-

guid Circulation, and loaded Vessels of the Brain. This makes it proper against chronic Fear, wherein the Solids are relaxed, the Blood's Motion languid, the Juices ill prepared, unfit to pass the Strainers of the Body, or afford wholesome Nourishment. In beginning Dropsies before the Vessels are either distended beyond their Tone, or broken, only the watery Parts of the Blood pass not fully through the Veins, but begins to stagnate in the distended Vessels, or shut up such as return the Lymph plentifully from the Cavities, and the Liquids already deposited in them, are but exhaled or re-absorbed by the Veins in part, then are the Vessels distended. Here *Green Tea* drank strong and sparingly, with much brisk Exercise, especially Riding, is good; these two revive the Strength, thin the Blood, provoke Urine, brace and scour the Vessels, increase Perspiration, Circulation, and Secretion, move the stagnating Serum, cast it back into the larger Vessels to be mixed with the rest, and evacuated at proper Places. As to the Gout, the Exemption of *Chinese* and *Japanese* from the torturing, distracting Pains of the *Gout, Stone, Gravel,*

Gravel, and *Rheumatism*, is Proof enough of the Efficacy of this Herb, since they know nothing of these Diseases which so frequently attack us *Europeans*, though the mountainous Parts of *Japan* are colder than our Climate; yet their constant sipping of this warm Liquor, secures them from all Agonies of this Sort. Nor is this Diet ill adapted to the *Scurvy*, where one part of the Blood is too thick, and another too thin, sharp or salt, wherein strong Evacuations never avail, but do Hurt by exasperating its Symptoms, if not making it incurable; but *Green Tea* helps to thin the gross Humours, restore Motion to the stagnant, separate the Cohesions, soften and blunt the Saline, and give a better Consistence to the too thin. In *Intermittents*, where there is a great Siziness and Lentor in the Blood, with a lax Fibre and Vessel, *Green Tea* is both pleasant and useful, being a Thinner, Rouser, and Bracer, and may be a Substitute to *Wormwood* and *Camomil Flower Tea*. I mentioned its Serviceableness before in a gross, moist, thick, foggy Air, or fenny watery Places. As its moderate Use and Strength contributes to preserve the Vigour

of the Vessels of our Bodies, and maintain the Ballance between the Blood and them, to hinder any Accumulation or Stagnation in the Vessels; so a Diet of *Green Tea* seems very proper during a Reign of epidemic Diseases.

A moderate Use of *Tea* of a due Strength, seems better adapted to the Fair Sex than Men; for they naturally being of a more lax and delicate Make, are more liable to a Fulness of Blood and Juices; as also because they have less Exercise or hard Labour, than which nothing braces better, or gives the Fibres a greater Springiness; and because they are less accustomed to drink Wine, whose Astringency corrugates the Fibres, and enables the Vessels to act with greater Briskness and Force, so in some measure answers the End of Labour. And, as was hinted above, as to the Seasons of the Year, a Diet must be used at all times; but the hot Weather in Summer, with the foggy, cloudy, and moist in Winter, being Times wherein animal Juices are most liable to a Lensor, and our Bodies to a Fulness, from the lax State of the Solids, seem as fit as any for *Green Tea*. As to the
Stages

Stages of Life, Manhood being the Noon of our Age, Growth being then finished, our Vessels at their full Length, and in their greatest Vigour and Force, Digestions and Secretions best performed, here *Tea* may be drank safely, though least wanted; but it seems more suited to Growth, because we then are more liable to *Plethoras*, from the Provision Nature makes for our Growth; and the Decline of Life, when Circulation and Digestion are weaker, the Secretions grosser, Evacuations lesser, which expose the Body to more gross and flegmatic Humours; but old Age requires a more warming exhilarating Liquor than *Tea*. The phlegmatic and melancholic Constitutions, require *Tea* most, the Blood of the first being most liable to Lentors, from the Laxness of their Fibres; and that of the last, to an earthy Thickness and Grossness, which often wants a Diluter and Relaxer. As to the Quantity and Strength of this Liquor to be drank, all phlegmatic, corpulent, dropical People, and of a bad Habit of Body; and all that have lax Fibres, whether hereditary or acquired, should drink it in small Quantities, not above two or three Dishes

at most, and pretty strong, as three or four Tea Spoonfuls of Tea to the two Cups. Sanguine People should drink it weaker, but not in large Quantities, since they are liable to a *Plethora*, to which this exposes them least of any Drink. Melancholy Temperaments should drink it of a moderate Strength, and with more Freedom, since their Fibres are so strong, and their Blood black and thick. Only Company and Fashion should prevail with the Bilious to make *Tea* a Diet, their Fibres being too springy, and their Perspiration too great; such should drink it seldom, small, and with much Milk. But to all the Persons and Cases wherein *Tea* is hitherto recommended, and we suppose it to agree with them, and that its use produces no sensible or visible bad Effects; for where it does, it is much more adviseable to refrain it, seeing Providence has furnished us with great Variety of other Food and Drinkables, that it would be stupid to run any Risk from meer Caprice, Humour, and Fashion.

C H A P. X.

Of the ill or bad Effects of T E A.

AS was said before, take we *Tea* in a dietetic View, it seems in the general (if drank moderately) not only harmless, but very useful : But view it in a medicinal Light, there is scarce any Distemper for which Nature provides us not with infinitely better and surer Help from other Vegetables. However, even in Diet, daily Observation satisfies us, that *Tea* has its Inconveniencies and Mischiefs that follow its habitual Use ; whereof I shall just mention a few. Such as have very sensible and springy Nerves, after a shorter or longer Use of *Tea*, in greater or lesser Quantity, stronger or weaker, have often a Tremor or Shaking. Here *Tea* occasions Impediments in the Circulation of Humours, and produces sundry Defects ; *Bohea Tea* especially, from the little remaining dry peculiar essential Juice, as well as Oil and Earth, which throw all the Nerves into those convulsive Vibrations. In sharp watery Distillations on the Wind-pipe or Lungs, causing frequent, laborious,

laborious, tickling Coughs, or in convulsive Coughs, the Use of *Green Tea* is imprudent in the general; for tho' it thins the Humours, yet it pricks the Fibres, whereby they are irritated and contracted, the Vessels made narrower, and more sensible of the Blood's Sharpness; hence the Cough is encreased. In Coughs, Shortness of Breath, and Obstructions of the Lungs, from a Sickness of the Juices, because of the Blood's Lensor, and the Weakness and Laxness of the Vessels, the Use of *Bohea Tea* is wrong in general, since its Property is to smoothen and soften the Fibres; but this Case wants Cleansers, Thinners, and Rousers, such as *Green Tea*. Cachectic, cacochymic, leucophlegmatic, dropical, and phlegmatic Persons, have little or no Good to expect from *Tea*, especially *Bohea*; such want Invigorators, Cleansers, and Stimulants, which at the same time promote Evacuations. Nor is the Use of *Bohea Tea* adviseable in Obstructions of the Liver, Spleen, Sweetbread, &c. in general, for Reasons above. Nor is *Green Tea*, of any Strength, by any means safe, on Recovery from long and continued Fevers, which have wasted the Body, and

shattered

shattered the Constitutions ; here Restoratives, nourishing and balsamic Diet, is wanted. Nor is it good where the Stomach is weak, exquisitely sensible and delicate, whether from the Thinness or Loss of its mucous Coat, the Sharpness of some Humours, or the Delicacy and Sensibleness of the Nerves ; here *Tea* gives often great Pain, Cholick, or Uneasiness. Or where the last Causes lodge in the Intestines, *Tea*, especially *Green*, has the like Effects : Both must also be manifestly hurtful in the dry Gripes, where tepid, relaxing, smoothing Things are wanted. Such as lead an idle sedentary Life, should either drink little, or have it pretty strong and seldom, to compensate, in some measure, their want of due Exercise ; but hard working laborious People have nothing to do with it ; they want a Liquor that stays longer in the Body, elevates and nourishes more. I would likewise dissuade from using it, all that feel a great Coldness in the Stomach and whole Belly, so as to cause Shivering after it ; and when it occasions a Paleness, a faint discoloured Look, nocturnal Pains, Numbness of the Hands, Dimness of Sight, Lowness

Lowness of Spirit, Want of Sleep, Loss of Appetite, Weakness and Leanness, &c. To all these may be added, the too common pernicious Custom of drinking it with volatile Spirits, Drams, &c. The last Disorders are no Exceptions to a moderate Use of *Tea* in general ; for with how many Persons do Milk, Ale, Drams, Cheese, and many other Meats and Drinks disagree, yet all of them are good, and do well with such as they agree with. Nor is it possible to say before-hand, with what healthy Persons *Tea* will disagree, till they have used it ; where it disagrees, it should immediately be left off ; for there is no altering or compelling a Constitution. However, where it agrees, it excels all other Vegetables foreign or domestick, for preventing Sleepiness, Drowsiness, or Dulness, and taking off Weariness or Fatigue, raising the Spirits safely, corroborating the Memory, strengthening the Judgment, quickening the Invention, &c. but then it should be drank moderately, and in the Afternoon chiefly, and not made too habitual.

DISCOURSE

DISCOURSE II.

Of Sugar, Milk, and Made Wines.

CHAP. I.

Of SUGAR.

A S Tea without Sugar makes but a very ordinary Tipple to most People; and as Taste rather than Health or Constitution, is consulted in the Use of it, it may not be amiss to consider it a little here, without troubling the Reader with any Harangue in a Description of the Cane, its Culture, or Preparation of its Juice, which may be met with in abundance of Authors: Nor is it needful to enter into the several Controversies about it, as whether it was known to the Ancients, or whether it is a Native of the *East* or *West-Indies*, &c.

Labat has made it pretty plain, that it is a Native of both *Indies*; but the *Spaniards* and *Portuguese* learning from the *Ori-
entals*

entals the Art of expreffing, or boiling the Juice of the Cane, and refining and bringing it to Sugar, feems to have given Rife to the Difpute; though *Salmafius* affures us, that the *Arabians* had this Art 800 Years ago. The Ancients indeed mention a Sugar which was much finer and purer than ours. It oozed out of the Cane itfelf, and there hardened in the Sun, like a Gum, was friable between the Teeth like Salt, and was only the fineft and ripeft Part of the Juice, and fo free from Mixture of Al-lom, Earths, Afhes, Lees, and other Things ufed in the refining of ours. Great is the Wafte of the Juice in Boiling, for there is fcarce a third part left for the fixth and laft Boiler that was in the firft, the reft being loft in fcumming.

Geofrey prefers *Caffonado*, or that made from *Muscovado* (which is the firft drawn from the Juice of the Cane) to all others for inward Ufe, as containing more Oil. Sugar, like Oil, is wholly inflammable in the Fire; like Salt, it totally diffolves and mixes in Water, and made into a ftrong Lye, it chryftalizes; yet mixt with Water, it ferments and makes a ftrong Wine, and
that

that Wine is convertible into as strong a Vinegar. Sugar, by rubbing in a Mortar, incorporates with Oil. Hence *Boerhaave* well observes, that perhaps in all Nature there is to be found no other Body besides, in which all these Properties conspire. Hence it is plain, that Sugar is a pure Soap, a Combination of Oil and Salt, or a true essential oily Salt, which with Oil makes an extemporaneous Soap. From this soapy Nature of Sugar, when it is diluted with the animal Juices, they make a kind of soapy Lye, which by the Force of Circulation dissolves fatty, oily, and viscous Bodies or Juices; and breeds not, but cuts, thins, and dissolves Flegm, and increases not, nor turns to Bile, but opens, thins, and dissolves it; yet by dissolving the Fat or Oil of the Body too much, it may produce Leanness; or by attenuating too much, it may occasion Weakness and Relaxation, and therefore injurious in several Diseases. But Sugar, on Distillation, *Boyle* long ago observed, contains an acid penetrating Spirit, which rots the Teeth of its excessive Consumers, and exposes them to bad Fevers. Sugar being a kind of Soap, the more refined must be a
great

great Cleanser of the Lungs, and a gentle Stimulator of the Kidnies ; therefore gross, cachectic, and heavy Bodies, should use the finest in their Tea ; which being too strong and abrading for thin hectic Constitutions, such should prefer the coarser sort, which having more Oil, lubricates and softens more, and stimulates less ; and therefore will sooner occasion Obstructions, and leave a Lensor on the Insides of the Vessels ; and Strainers of lax, unwieldy, cachochymic Bodies. The Sweetness of Sugar arises from the intimate Union of its Principles. Sugar-candy is best in Colds and Catarrhs, for it melts slowly in the Mouth, and gives time to the Saliva to mix with it, and some part of it, with the Breath, goes into the Lungs, and blunts the Acrimony of the Flegm. With the Skimmings of the Juice of the Cane in the first and second Boilers, the Sugar-makers feed their Swine and Poultry, which from its Oiliness soon fattens them, and their Flesh becomes very delicate.

The coarser the Sugar, the more closely is its essential Salt united to its Oil and viscous Parts, which the Lime-water, Lyes, and

and Eggs, used in its sundry Decoctions and Clarifications, divide and attenuate, or carry down to the Bottom, or raise them to the Top in a Scum; and the oftener these are repeated, the finer it is. This course Sugar used moderately, is a notable Balsamic, and serviceable in sheathing up sharp Humours, which irritate the Lungs, and excite a troublesome tickling Cough. But where gross Phlegm loads and stuffs the Lungs, double or treble-refined Sugar, or White Candy, incide, attenuate, break, and separate this Viscidity, and gently irritate the Organs of Respiration to pump it up. For this Reason it is good in a Cold, when the retained perspirable Matter is thrown upon the thoracic Contents to be from hence discharged. This fine Sugar is no less useful in several Viscidities of the Blood, or too great Serosity of the Juices, the Solids being lax and sluggish; here its fine Salts attenuate and prepare the first for Circulation and Evacuation; it abrades the slimy Mucus from the Insides of the Vessels; by the Solidity of its saline Particles, and the fresh *momentum* raised in the Blood, gives it a better Consistence. It is especially

beneficial to the Aged, Phlegmatic, and Sluggish; and to gross-bodied Children, if moderately used. It agrees well with cold Climates, foggy Air, Winter Season, and rainy Weather. It is also of Use in gravelly Cases, being a fine Diuretic: In all which Cases it is well adapted to *Green Tea*, joins Issue with, and makes it answer better. Coarse Sugar, containing much of its Oil, and its Salts not being subtilized, nor having their sharp *Spicula* unsheathed; but being more hid in the coarse Oil and viscous Earth; as also the Salts of the Lime and Lees; therefore, I say, it affords much Oil to the adipose Vessels; in which, with the Adhesion of its fine earthy Parts to the Sides of the Vessels, make it fitter for thin, meagre, unhealthy, or hectically disposed Habits, whereby it is better suited to *Bohea Tea* than *Green*. But fine Sugar is the Opposite to very choleric Constitutions; for being too stimulating, it encreases the Motion of the Fluids; its Salts wear the Insides of the Vessels, and dry the Body: For this Reason should meagre Persons take care how they make too free with it, nor should they indulge themselves an Excess of the
coarse;

coarse ; for tho' its Salts are not so naked and sharp as to wear the Vessels with their Solidity and Number, yet it is too apt to turn acrid, and render the Juices such. Coarse Sugar is injurious to phlegmatic and bulky Bodies, seeing it encreases the Oiliness and Viscidity of their Juices, over lubricates and relaxes the Solids, begets many and obstinate Obstructions, which frequently terminate in a Cachexy. The much Salt and Lime in fine Sugar, excite Thirst, dry the Blood, and encrease its Motion ; therefore should it be sparingly used in hot, dry Weather, hot Countries, and ardent Fevers.

Several Authors charge the chief Cause of the Prevalency of the Scurvy in the Northern Parts of *Europe* upon it, because the Chymists extract out of it a most acid, sharp, penetrating, and dissolving Spirit. Tho' I am not to answer for the Effects of its Excess, yet this seems a groundless, if not ill-natured Reflection ; for we read of the Scurvy in *Britain*, when it was a *Roman* Colony ; and we know also, that Salt, Honey, Salt-petre, Brimstone, &c. afford more acid and corrosive Spirits ; and the first of these is far more frequent and gene-

rally used than Sugar. The coarser Sugar is sweeter than the finer ; for retaining more Oil, it continues longer on the Taste ; for if the Oil be separated from the Salt, neither of them is sweet, but the last is acid, and the other is insipid ; but when both are mixed, the Salts penetrating the Pores of the gustatory Nerves, make way for the Oil to follow ; both entering, and gently irritating, cause the Sweetness of its Taste. *Maderas* Sugar was formerly esteemed best, that from the *Canaries* next ; and lastly, that from *St. Thomas* : But now *Jamaica* and *Barbadoes* are inferior to none. Next to them is the *Lisbon*, tho' it is not so white, it is more fat and oily.

C H A P. II.

Of M I L K.

TEA being commonly drunk with Milk, which is also a considerable Part of Diet in the Country, to Children especially, it deserves some Notice, as well as an Exotic Leaf.

If new Milk is set by a very few Days in a warm Air, it first throws up its Cream, then

then the whole thickens into a soft Coagulum, of a sweetish Taste ; then it breaks and shivers into many small Pieces, and a clear transparent watery or wheyey Part fills up the Spaces between the Curds, and floats above them, the whole is now remarkably subacid ; the watery Part encreases, and the Coagulum turns lesser and stiffer ; now the Milk smells and tastes sour, and the Whey, with new Milk, will quickly make a fine Posset.

Milk soonest turns thus sour, according to the Warmth of the Air, or Food of the Cows ; for when they pasture on sour, tartish, coarse Grass, or early in the Spring, or very late in Harvest, at Addish or Fog, the Milk will sour sooner, than at sweet Grass in Summer, or at Hay in Winter, supposing the Air equally warm ; and the more it is inclined to sour, the whiter are the Milk, Butter and Cheese.

If Cows are hard run, over-driven, much heated, sick or feverish, their Milk is less, and it, its Butter and Cheese, will be of a lighter or deeper, bilious or yellow Colour, if not reddish ; and sometimes it will coagulate in the Udder, as it now and then

happens to Cows pasturing on very four Grass; but in the former Case the Curd is ragged, soft, spongy, and yellow, or reddish; in the latter it is white and harder.

The same Cows feeding on different Pastures and Soils, give different kinds of Milk, both in Colour, Oiliness, Taste, Consistence, and Effects on our Bodies; great is the Odds of Milk given by Cows on four Grass, Summer-Pasture, Fog or Addish, cool Herbs, Aromaticks, Capillaries, and such odoriferous Plants as abound with essential volatile Oils or Salts, &c. Milk also differs according to the Keeping, Strength and Age of the Cow; one clean kept both at Stall and Pasture, eats fresh good Food, drinks pure Water, lies clean, soft and warm, gives much better and wholsomer Milk, freer from excrementitious Discharges that should be carried off by other Outlets, than one that is kept otherwise. A leanish, weakish, or idle Cow, gives more Milk in proportion than a fat, strong, brisk, stirring, active one; an old Cow more than a very young Beast, &c.

Milk drop'd or milked into the Eye, gives no Smart nor Pain; and *Boerhaave's*
Expe-

Experiments upon it with Acids and Alcalies, shew, that it makes no Fermentation or Effervescence with either, except one be put in first, and the other after ; then a much greater Ebullition follows, than if they had been mix'd alone without it. He has proved that Milk-water obtained by Distillation, has no Sign of an ardent Spirit, but is insipid and pleasant ; nor will it ferment in the least with Acids or Alcalies ; nor is there any perceptible saline Matter in it ; it leaves in the Still a thick, yellowish, fatty Mass, of a sweet and agreeable Taste. All Acids, from that of the gentle Vegetable to the chemical Spirits, curdle Milk, but heightens its Whiteness both in Curd and Whey. On the contrary, fix'd alkaline Salts, or their deliquated Oils, curdle it ; but the Curds are raggy, soft, spongy, yellowish ; or if they are drop'd into Milk whilst boiling, they first turn it yellow ; or if much of them are put in, and the Milk long boiled, it turns reddish, thick, and stiff.

Which Observations afford these following Inferences ; 1. The white Colour, sweet Taste, Consistence, and Oiliness of Milk, prove it to be Chyle of Animals, produ-

ced by animal Powers from the Vegetables they feed on, chew and swallow down; and are by its Action digested in the Stomach, thrust into the Duodenum, mixed with the Bile; and further digested by the Action and Juices of the Intestines, elaborated again in the Mesentery and Thoracic Ducts and Glands, mix'd with their Juices, poured into the Subclavian Vein, undergoes the Action of the Veins, Heart, Arteries, and Lungs, is assimilated to the animal Juices; in which last Course its thinner Parts are again strained off by the Lymphatics, but still continues separable from the other Juices by the Glands of the Breast. 2. Milk and Chyle thus produced, are only an Emulsion prepared from Vegetables in the animal Body. This is also proved from the Resemblance they bear to one another, not only in Colour, Taste, Consistence, and Oiliness; but both Milk and Emulsions made of native Oil and Water, throw up to the Surface of their Liquors, a white, thick, and oily Cream, and if both are kept some time in a warm Air, both turn first sharp, then quite acid; but Emulsions will neither coagulate with

Acids nor Alcalies, like Milk. 3. Emulsions prepared with Grain or Seeds, like Milk, turn sour, from the mealy Parts in them; but Emulsions made with Oil, from a want of that Meal, turn rancid. The Whiteness of the Milk, and the Butter it yields, shew Plenty of Oil in it, every where divided and mix'd with it, Whey or Water, as does the Cheese its earthy Parts. 4. However intimately this Oil and Water are mix'd, or united in Milk, yet it contains also abundance of farinaceous and earthy Parts, and acid Juices in the Herbage, which is the Reason it turns sour, not rancid. 5. Animal Food, containing Grain or Seeds, abounds with much Oil, which being chewed in the Mouth, swallowed and mix'd with the Saliva of the Mouth, Jaws, Gullet, and Stomach, turn white, or whitish; yea, if chewed long in the Mouth, and well watered with Spittle, it turns white there. 6. We see Oil is a constituent Principle in Vegetables, and that the Fat in Animals derives its Origin from hence, since it can be prepared and extracted from Vegetables by chewing, Rumination, and the chilific Power of the Body. 7. The Ascension

sion of Cream-milk, though entangled in abundance of earthy and farinaceous Matter, as well as the floating of Oil on the Surface of Juleps made with Oil and Water, and the Clearness and Inflammability of melted Butter, and the softening, relaxing Nature of Butter, its Aptness to turn rancid by long keeping, do all prove the Oil in Milk; and the Fat of animal Bodies are exactly of the same Nature, and that both come from the Vegetables fed on, and therefore more mediately a vegetable Oil.

8. Hence we see why healthy People, indolent both in Body and Mind, feeding on Milk, or on the unfermented Product of Grain and Water, may become very, yea unweildy fat, since so much Oil is obtained from Vegetables so easily; these are far less oily than Grain or Seeds.

9. This explains the Origin of Oil and Milk, as did Emulsions prepared from Oil and Water; or from oily Seeds, affording a Liquor like Chyle or Milk, shew us how the Body acts in producing these two in itself.

10. This acquaints us with the Nature of those Principles which constitute Chyle and Milk, *viz.* the Spittle of the arterial and glandular Discharges

charges of the Mouth, Jaws, Gullet, Stomach, Intestines, and Mesentery, and the watery, soapy, oily, spirituous Parts in those several Juices, which were brought into the Form of Emulsion, and strained off from the grosser Parts, by chewing, swallowing, and the Action of the Bowels. 11. Since Milk and Chyle are chiefly the Product of Vegetables, and both the Animal giving the Milk, and that feeding upon or nourished by them, receive Nutrition, Growth, and Subsistence by them, then our Bodies mostly consist of Vegetable Parts; for the Animal that gave the Milk, and other alimentary Things made from it, were constituted of Vegetables and Water; and if we eat their Flesh, we only feed on a Compositum of Grass, Hay, and Water; so that either immediately, or mediately, human Bodies consist of Vegetables, and all their Juices (even the generative Liquor itself) are derived from them: Then literally, properly not metaphorically or figuratively, might the Prophet say, *All Flesh is Grass*. 12. Milk being only a thicker Chyle (having less Lymph to dilute it) begun to be assimilated to the Juices of the Body, which re-

ceives both Nourishment and Growth from it; then all Animals of all Sexes, Ages, and Conditions, have Milk, only Males are not provided with proper Strainers to separate again the less diluted Chyle or Milk from the Blood, Providence not intending that Sex to give Suck. 13. Thus every Animal lives, is nourished, and receives Growth and Strength from its own Milk; and thus all the Parts (even the most solid and hard) of its Body, both Solids and Fluids, are formed out of Milk, which contains in itself all the Parts of our Bodies. 14. Since our Bodies receive both Nourishment and Growth from Milk, and it contains all the Parts of our Body, then it is possible for a Man to live many Years on Milk alone, and performs all the Actions of Life. But as it has undergone all the Digestions in the Body of another Animal before he had it, its nutritive Parts will sooner be separated, its useless expelled, and his Body demand frequenter Supplies. 15. Since Milk is both thick and a nutritive Aliment, then it is more of an animal Nature than Chyle, which is more of a vegetable kind, and still more so, as it approaches nearer its taking
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into the Body, as in the Intestines, Stomach, &c. 16. Since Milk coagulates into a hard, white, stiff Curd with Acids, and a soft spongy Curd with Alcalies, but shews not the least Effervescence or Ebullition with either, nor smarts even the Eye; it is of a soft, smooth, balsamick Nature, not immediately inclined either to one or the other. 17. But since either long Keeping (in warm Weather especially) or Cows feeding on tart sour Grass, turn the Milk sour, when out of the Body, tho' it seems at first to be mild, yet it is of an acerbent Disposition, inclined to turn acid. 18. When Grass or Herbage abounds most with Acid, as in the latter End of Harvest, in time of Fog or addish Pasture, or very early in the Spring, when Vegetables are most redundant with Phlegm, Milk will soonest sour in the same Degree of Heat, keep longer in Summer, and longest of all in Winter, when Cattle feed on Hay and Water. 19. From the Curd of Milk being exceeding white with Acids, and the Whey exceeding clear, and both Coagulum and Whey, from fixed alkaline Salts, or their deliquated Oils, being of a bilious yellow, or reddish,

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we know which is the wholsomeſt ſimply conſidered, *viz.* neither the whiteſt, becauſe it tends too much to acid; nor the yellow, for it is diſpoſed to alkaline; but each of them is beſt when ſuited to different Conſtitutions. 20. Hence it appears which, why, and when theſe Milks are apteſt to coagulate in the Breſts of Animals; and the dangerous Conſequence accruing therefrom to the Creature. 21. Hence we ſee why Infants, or other Young, will not ſuck, but loath a yellow, thin, ſaltish, and ſanious Milk; for it being attended with great Heat and Fever in the Animal, it is alkaline, if not putrified, from the ſcorching Heat of the Breſt. Hence appears Peoples egregious Folly and Ignorance in pouring down the Creature's Throat, in this State, alkaline, heating, and aromatic Medicines. 22. This alſo ſhews the Error of giving Alkalies to diſſolve coagulated Milk on the Stomach, ſeeing Alkalies prevent not its curdling, but only hinder its running into a ſtiff, hard, dry, cheeſy Curd. 23. Here we find the Reaſon of the different Colours of Cheeſe and Butter, ſome very white, others yellow or yellowiſh, as the Milk is
more

more disposed to, or removed from an Acid.

24. Hence we see why Milk retains its Colour longest in weak Constitutions, and is slowly brought to the natural Redness of the Blood, which is thin, pale, and watery, till the Weakness and Coldness of the Constitution be cured. 25. This shews the Impropriety of a Milk Diet in a Cachexy, Chlorosis or Green-sickness, when the Habit of the Body is of a pale, yellowish, or greenish Colour, or where the Sweat or other Discharges smells sourish. But in strong Constitutions, where there is brisk Circulation, and a good Heat, Milk soon loses its Whiteness, and is converted to the Colour of the Blood. 26. Since Milk is only Vegetables prepared by the animal Powers, however indifferent we are in Health, about the Pasture, or Beasts that give, yet we should be more cautious either in Sickness, or in a valetudinary State. For an Atrophy or Marasmus, call for a thick strong Milk, as of Goats, who live much on Leaves or Boughs of Trees. In a Hectic, thin cooling Milk of Asses or Mares, for Asses feed much on cooling Plants, as Sow-thistles; or on Butter-milk, whose Oil
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is taken out, and the Milk more asceſſent and cooling, &c. 27. From lean thin Animals, of but a moderate Strength, giving more Milk than fat, plump, ſtrong active Creatures, we ſee a good deal of Strength is neceſſary to aſſimulate, and convert the Milk into true Blood; hence weak cold Conſtitutions are only able to change a part of it. The contrary is the Caſe with ſtrong active Habits. 28. The Knowledge of the Preparation, Nature, and Changes of Milk, is of ſpecial Uſe in the nurſing of Infants, for when they are hot, feveriſh, thirſty, look florid, and their Urine high coloured, their Nurſes ſhould diet on vegetable Foods and Potables of the aſceſſent Kind, as Milk, Small-beer, Bread, &c. But when their Complexion and Urine look pale, their Belchings and Stools ſmell ſour, and their Body coldiſh, then Broths and animal Food ſhould be the Nurſes Diet. And ſince running and over-heating the Body by Labour, or Exerciſe, turns the Milk yellowiſh or alkaline; and too much Idleneſs or Lazineſs, or too acid Food, leſſen and retard the neceſſary healthy Secretions, and turn the Milk more aſceſſent, Nurſes ſhould guard
againſt

against all these ; nor when hot or feverish, should they give the Infant that Milk to suck. 29. Since the lessening or retarding, or too quick accelerating the Secretions of Milk, Animals do sensibly alter or hurt their Milk, which is part of our Food, then special Care should be taken (for the sake of our own Health) that such Creatures be kept, and lie clean and warm, that their Perspiration be not hindered, and the excrementitious Parts of it be not retained in the Milk, for us to take into our Bodies. 30. Since daily Observation assures us, that different Kinds of Pasture affect and alter the Milk, we should be careful not only to pitch on proper Animals to give Milk for the Sick, but on Pasture for them, suited to the Case or Disorder of the Sick, since we have seen that Chyle and Milk are only vegetable Emulsions, which, if improper, will do Hurt, as sure as the well chosen will be beneficial. 31. Not only the Quantity, but Consistence, and some Part of the Goodness of Milk, depends on the Age of the Animal that gives it ; thus old Cows give more and thicker Milk than very young ; *i. e.* young, hale, strong, brisk

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Animals, convert more of their Milk into Blood than old ; their Milk is thinner, lighter, and easier of Digestion.

Milk, as was hinted before, differs, 1. According to the different Animals from which it is taken ; Womens Milk, of all others, is the most agreeable to our Constitutions, as it is the first and general Nourishment which Nature has provided for all ; it digests more easily, and nourishes much, abounds with Serum, and has a middling Quantity of Butter and Cheese in it. Next to this is Asses Milk, which differs little from it. After them is Mares Milk, which has little Butter or Cheese, but very much Serum or Water ; Camels Milk is much of this Nature, and is often used instead of Mares Milk, where Camels are plenty. Cows Milk is harder of Digestion than any of the former, but is more nourishing to healthy Persons, and very grateful to the Taste ; it contains most Butter of any of them, but less Cheese in proportion. Goats Milk is thicker, has less Serum, and more Cheese, which makes it so agreeable to moist Bodies, who expectorate much, and whose Lungs are a continual Pump to drain the
Leaks

Leaks of the whole Body. Sheeps Milk has less Serum, but more Butter and Cheese, which makes it thicker, of harder Digestion, and apt to produce more and greater Obstructions in such as use less Labour or Exercise, therefore it is rarely used, except by some Rusticks. Sows Milk has scarce any Cheese, but very much Water, therefore it is raw, insipid, disagreeable and never used.

2. It differs according to the Age of the Animal that gives it, for the Glands in young Animals Udders, have more and smaller Vessels, more compressed by one another, less dilated, or used to strain off Milk from the Blood, therefore the more ferous Parts are secreted, and less of the earthy or gross, which makes it more raw and thin. On the contrary, the Udders of old Animals have fewer, more dilated, and larger Vessels, which have been more accustomed to strain off much Milk, wherefore the Secretion has been more, and the Discharge from the Blood greater that way; their Milk has more Cheese and less Cream, therefore it is more thick, gross, and heavy,

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than the Milk of a young Animal of the same Kind.

3. It differs according to the Nearness or Distance of Time since the Animal brought forth its Young, for that which is milked three or four Days after, and for several Months, is thinner, softer, and of more easy Digestion, than that which is milked just after they have brought forth their Young nine Months or a Year after, which is much thicker, heavier, and has more Cheese in it.

4. It differs according to the Season of the Year, for in Spring and Summer, when Herbs are more juicy, the Milk is thinner and lighter, but has more Acidity in it, because the Animal feeds mostly on green Herbs. In Winter it is thicker, has more Cheese and less Serum, because the Beast feeds upon Hay or Straw, then the Milk is less acid, coagulates not so quickly, so that it is not chiefly the Cold which hinders its Coagulation, but lesser Degree of Acidity.

5. It differs according to the Food whereon the Animal lives; for such Creatures who live chiefly upon others, their Milk neither sours nor coagulates, but having
much

much alkaline Salt, it putrifies, turns acrid, fetid, ferous, and often sanious, smells like putrified Urine; but the Animals which feed on Vegetables, give a Milk which throws up a Cream, coagulates, sours, and plainly discovers its Acidity.

The best Milk for healthy Nourishment, is that which is newly drawn from a middle-aged Animal, healthy, and fed with good Food; that which is white, neither too thick nor thin, has a good Smell, without any harsh, brackish, bitter or sharp Taste.

Milk that has those Properties, abounds with oily balsamick Parts, which make it very softening and fit for good Nourishment, without much Labour or Toil to the digestive Faculty, being a Chyle already prepared upon the Stomach of another Animal, having pass'd the Lacteals, been mixed with the Blood, undergone several Digestions and Secretions, freed from most of its gross excrementitious Parts, and fitted to pass the like animal Tubes it had before gone thro'. It is especially suited to thin, wasted, and lean Bodies, whose Juices are thin and acrid, or their Solids too stiff and elastic; for its Abundance of Oil lubricates the Vessels, di-

minishes their Force, and sheaths the alkaline Salts, which irritated the Fibres, and encreased the Rapidity of the Blood's Motion, and diminished its due Consistence. It is a common Error to think to mend Milk by boiling it, that deprives it of its purest and finest Serum, which dilated its ramous or sulphureous Parts, and makes it thicker, whereby it communicates a Taint of Viscidity to our Juices, which, though quickly overcome by the Exercise or hard Labour of the Mechanick, yet not so soon conquered in the Vessels of the Aged, Studious, Idle, Valetudinary, or those of weak Stomachs, but leaves stuffing Fulness at the Stomach, and Obstructions in the small Vessels. It is the best Food in the World to a shattered Constitution by long and dangerous Fevers, which have left great Weakness, and brought on an Atrophy, with an insensibly wasting Hectic; for the Fibres and Vessels being almost worn out, and incapable of digesting solid Food, without finally wasting their small Spring which remains, and kindling a strong hectic Fever after eating, and that succeeded by colliquative Night Sweats, nothing in this Case
can

can challenge the Preference of a Milk Diet and good Air (except Viper Wine or Broth) as it is a Food ready digested, fit for Nourishment, suffers the Vessels to play easily, receives little Force in them to grind it down, but only what is necessary to move it slowly on ; and, in its Course, as it gently glides along, it takes off the Stimulus of the Fibres, lubricates, moistens, and repairs their waste, restores the Consistence of a too fluid Blood, fills the Tubes with fresh lymphatic, arterial, and nervous Juice, ready strained off, made and elaborated by the healthy strong Vessels of another Animal. As it is endued with balsamick Qualities, or much Oil intimately mixed with its Salt, Phlegm, and Earth, it expands, fills, and supplies plentifully, the small Tubes of the Body, augments the Chyle, increases the *Semen*, and excites Venery better than Wine or Spices, which act only by Stimulation, and raise Nature above itself ; but Milk, by distending the spermatick Vessels, encreasing and laying in a large Stock of good-conditioned Sperm ; hence such as live chiefly on Vegetables, Eggs, Milk, Shell-fish, &c. are far more disposed

to Venery than others; neither are they made languid by it, for they are not provoked by Irritation of the Parts, but a Repletion of them, which stirs them up; for the same Reason Custards boiled, Milk with Eggs, Rice-pudding, &c. are still greater Additions to this Property of Milk. Where there is a constant troublesome tickling Cough, without Expectoration of much Phlegm, or stuffing of the Lungs, proceeding chiefly from acrid Salts irritating and pricking the small tracheal Vessels, a Milk Diet gives great Relief, for its Oil softens and dilates the Vessels, gives a more open and free Course to the Blood, obtunds and sheaths the Points of the Salts: Or where there are any small, stony, or cretaceous Obstructions beginning in the Lungs, this softening, opening, and enlarging of the Vessels, gives some Hopes of their being cast back into the larger Vessels. On this account the famous *Sydenham*, with a great deal of Justice, recommends a Milk Diet for the Cure of the Gout, which answers equally in other arthritick Pains, from a contracted State of the Vessels pricked and drawn up, and checking the acrid Salts of

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the Blood, which cannot pass the conic Tubes, without their Points being darted into, and fixed in the Fibres of the fine and delicate Membranes. It is no less serviceable in all Fluxes of the Belly, arising from sharp, pricking, alkaline Salts, for it sheaths them, takes off the Stimulus from the Glands, smooths the Vessels, restores a due Consistence in the Fluids, encreases the Discharge by Urine, and composes the Hurricane of the Microcosm. It is greatly beneficial in a Strangury, or Sharpness and Heat of the Urine, which is occasioned from much acrid Salt in the Blood, pricking and inflaming the urinary Ducts, and distending their Vessels. After an inward indiscreet Use of Cantharides, or Application of strong Blisters, or other sharp Medicines, which inflame, prick, and often tare the small Vessels of the urinary Strainers or Ducts, and sometimes cause an Hemorrhage by Urine, large Draughts of new Milk cure almost infallibly, especially if it have Mallows boiled in it. In thin, lean, scorbutick Habits, attended with cuticular Irruptions, containing sharp, salt, ichorous, sanious, or fetid Matter, Milk is very suitable,

table, as it blunts the reigning Alkali, removes the constant uneasy Stimulus of the Fibres, covers the Insides of the Vessels with a soft oily Litus, checks the Motion of the Blood, and makes way for the Apposition of the nutritive Juices to the worn Sides of the Vessels; therefore it is also good in scorbutic Hectics, Night Pains and Aches. In a Leprosy, or dry Scurffs or Scales on the Skin, or moist Out-breakings, Milk and a vegetable Diet, without the Use of animal Food or fermented Liquors, offer fairest for a Cure, if this Method be diligently and patiently observed for Months, or a few Years; for these Distempers arising from a long Reign of much acrid Salts in the Blood, and thrown out into the small Vessels on the Body's Surface; whatever hides, dilutes, dissolves those Salts till they be expelled, and the Juices sweetened, will help this Disease, and these will Milk perform, if used long and much. Animal Food, or Broths thereof, generate more alkaline Salts, and exasperate the Disorder. In Ulcers of the Lungs, Kidneys, urinary Passages, it is exceeding useful, and nourishes much, carries only ready prepared Materials into the
Body,

Body, and calls for little Strength to digest it, takes off Stimulation of the Parts, causes an easy Undulation of the Juices, affords much healing Balsam, and a fine Serum to wash away the Sordes of the Ulcers, constringes not their Mouths to pent up the Matter, but leaves the whole Ulcer to incarn and cicatrise alike. In the Small-pox, Milk and Water boiled, makes the most agreeable Drink, for it fills the Vessels, relaxes the Fibres, entangles much of the fluid Juices otherwise disposed to a quick Exhalation, provides and prepares Matter for the Pustules, which this Drink elevates, keeps up and full, and still supplies new Matter for them as the thinner perspires; this Drink taken plentifully, together with fit Medicines, raises and fills them again, till the Maturation be at Height, and Danger past. And in the Measles it promotes Digestion, keeps the Vessels full, prevents the Return of the separated Matter into the Blood till it be perspired, and Danger gone. When the Body is greatly constipated by drinking Claret, Hard-riding, great Heat, or any other Diet or Accident, new Milk drank warm, or Butter-milk, loosens the
 Belly,

Belly, cools the Body, and cleans the Intestines from Bile, and other acrid Humours, which causes Gripes, Cholick, &c. When Milk is used against a Diarrhea or Dysentery, it is best boiled with some Flint Stones, transparent Pebbles, Quarry Stone, and then poured off and drank; or hot Steel frequently quenched in it, or the above Stones; but what is better than all is, Powder of Sponge and Cork taken in boiled Milk; neither is Mallow Leaves, or Marsh-mallow Roots boiled in Milk, a contemptible Medicine, either in a Looseness, Gripes, or bilious Cholick. In hectic Dispositions, where Milk is used as a Diet, it ought not to be given alone, but with some Sugar, Honey, Chalk, Powder of Crabs Eyes, Claws, or a little Salt in it.

But altho' Milk be endued with all those and several other good Qualities, yet it is not so amicable in all Cases, and to every Constitution, for phlegmatic Persons reap no such Benefit from it, for their Blood being over-changed with Phlegm and other viscous Combinations, from a Weakness and Relaxation of their Vessels, and yet a Bulkiness of Body, Milk abounding with oily soft

soft smooth Parts, they give the Vessels no Stimulus, nor Invigoration of the Fibres, nor Dilution, nor Attenuation of the Juices, but render the Solids more lax, gentle, and indolent, and the Blood more viscous and unfit for Attrition, Mixture, Separation, Secretion, and Evacuations: Hence the unweildy Habit encreases on the Man, and the Bulk of his Illnesses grow, except he use much Exercise or hard Labour to prevent it. Aged People also require a more subtile, attenuating, and invigorating Food, for their Vessels being on the Decrease and Coalition, a viscous oily Food is not fitted to very small, stiff, resisting Tubes, but a more spirituous, thin, and strengthening, their Perspiration also being low and small; whatever Blood is of a viscous Nature, must clog, obstruct the Glands and excretory Ducts of the Skin, and diminish this Evacuation, and throw the great Load on the other small Vessels and whole Habit; and Nature having no Succedaneum to supply this so necessary a Discharge but the Lungs, a Load of thick Phlegm must be thrown upon them, to be constantly pumping up by Coughing: But even in this Stage Asses
Milk

Milk, because it is thinner, of easier Digestion, has less Cheese in it, and contains fewer Viscidities, may be useful to lean, thin, old, hectic Persons, though Milk of a thicker Body and Consistence will not do. Milk having so much Acidity in it as thickens and sours it, therefore is it not convenient for them who have much acid Salt in their Blood ; for whatever encreases the Acidity of the Blood, raises the Stimulus of the other Solids higher, and adds to the thickening of their Juices, and strengthens the Cause of that Multitude of Diseases which come from Acidity. It is no less improper where the Stomach is full of sharp Humours, for these act the Part of a Rennet to it, they coagulate and prevent its cheesy Part getting off the Stomach ; hence crude Congestions upon it, attended with Stuffing and Fullness, &c. The Signs of coagulated Milk on the Stomach, are Pains and Straitness in the Breast, Difficulty of Breathing, Danger of Suffocation, Swoonings and Faintings, Sourness at Stomach, Belchings and Loathings, Shiverings and Coldness of the Body, cold Sweats, a small trembling weak Pulse, &c. a Vomit given presently, is the best

best Cure, and then some Doses of testaceous Powders. Wherever the Glands or small Vessels are lined, furr'd up, or obstructed with a viscous slimy Matter, Milk must be refrained ; for it containing many gross Parts, indisposed to Motion, these will encrease the present, and bring on other new Evils, which come from heavy, viscous, and gross Humours. Whoever labour under thick Rheums and Catarrhs in the Throat, Lungs, or Nose, must abstain from Milk ; for these proceed from a Dilatibility of the Vessels, and a Viscidity of the Juices of those Glands, and Milk encreases both those Causes. In ardent Fevers, its Use is unallowable, because the rapid Motion and Heat of the Blood soon curdle it ; and as a Fever mostly comes from Obstructions in the small Vessels, it encreases those, and renders the Disease more obstinate, especially if we consider that the Blood is still more rarified ; and the more it is rarified, the more it is disposed to encrease the Fever, by rushing into the small dilated conic Tubes, where its grosser Parts are thrust forward till they stop, and its fluid Parts are strained off in the Action, or natural
Tendency

Tendency of the Sides of the Vessels to come together, whereby the Remains are left still thicker, grosser, and less disposed for Motion. This gross Part of the Blood that is stop'd, resists the Contraction of the Vessels, and both resist one another; hence the Heat of the Body is encreased. Now whatever adds to the Viscidity of the Blood, adds likewise to the Cause of the Disease, and tends to make it more obstinate; but the Cheese and Butter being taken out of the Milk, it is an admirable good Drink in Fevers. And because the Use of Milk does not so well in a rarified State of the Blood, when a great Part of it is thrown into the small Vessels, it is therefore an improper Drink when the Body is exceeding hot at Labour, and the Circulation rapid, for then it is great odds but it generates Obstructions of dangerous Consequence, either in the Lungs, and cause an Asthma; or in the Liver, and produce Dropsy, Swelling, Schirrus, or Inflammation or Ulceration, or load the small Vessels on the Body's Surface, and cause a Dropsy, or obstruct the Lacteals, and occasion a Diarrhea; at which time it also cools and debilitates the Tone of the
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Intestinal muscular Fibres. Because Milk abounds with Viscidities, it is unfit on that account to be used in intermitting Fevers, Dropsy, Cachexy, Pleurisy, Quinsy, or feverish Thirst. All these require Thinners, Exciters of muscular Motion, and Attenuators; but Milk may be so prepared, as to afford the best of Drink in all these Intentions. In Head-aches, from either a Plethora or Viscidity of the Juices, Milk is very bad, because it adds both to the Fullness of Juices and their Toughness, and thereby encreases the Pain. In Inflations and Distention of the Hypochonders in acute Fevers, it is highly prejudicial, for it adds to the Flatulency, Distention, and Oppression of the Vessels by its grosser Parts. In Jaundice, Schirrosity, or Inflammation of the Liver, Spleen, Mysterly, or Pancreas, it is very hurtful, for by its gross and tough Parts, it makes the obstructing Matter thicker, and more tough, hard, and immoveable. Milk that is brown, yellow, reddish, blackish, or brackish, it is always unwholesome, and should never be used, for it is then acrid, full of alkaline Salts, is bilious and sanious, whereby it would putrify,

trify, and turn fetid like Urine, not coagulate, or grow sour; such is the Milk of all Animals in Fevers, therefore do their Young loath it; or should they suck it, they would be sick, hot, feverish and thirsty; such also is the Milk of Animals after hard Driving, or much Running, which has heated them much. All Animals, which live chiefly or only on animal Food, and its Preparations, give Milk of this Nature; such also is the Milk of Animals given after they have eaten some sorts of alkaline Herbs, &c. All such Milk is easily restored to its natural Condition, by giving the Animal acid Food. Thus far of new Milk.

Blue Milk, or skimmed Milk, is the former, stood till it has parted with, and thrown up its Cream or Butter, which is its oily Part, and what remains neither softens, lubricates, relaxes, nor dilates, being only the Cheese and Serum together. It agrees pretty well with young People who have a good Appetite and Digestion, and generally with such as use hard Labour and much Exercise. Its Use is best in an oily Acrimony of the Blood, therefore it is very advisable where there is a bitter sharp Taste

Taste in the Mouth, like burnt or putrified Oil, attended with great Heat of the Jaws, and a Smell of rotten Eggs; or where there are black Spots and Erosions, fetid, white, fat, hot Stools; a high-coloured, fetid, frothy, scanty Urine, Driness of the Mouth, &c. But in all Cases where an Acid prevails, it is highly injurious; and so it is in scrophulous Conditions, in pale, ash-colour'd Bodies, or where the Glands or Lymphatics are loaded with Viscidities. It is also nought for the Idle, Studious, Valetudinary, Aged, Nephritic, &c. these must either wholly abstain from it, or be content with an exceeding spare Use and Indulgence of it. Butter-milk is that out of which the Oil is extracted, and the Cheese and Whey left behind; this is far more agreeable to bilious Constitutions than new Milk, for being stript of its Oil, it heats and inflames less, nor will it produce the Effects of an oily or nidrous Acrimony in the Blood. This is much preferable in all Cases where an alkaline Acrimony prevails, either in the first, second, or third Digestions, *i. e.* where the Breath, Body, or Stool, smell fetid or cadaverous; the Mouth, Throat, Nostrils,

Jaws, and Skin, are dry or rough; where there is a very great Thirst for ordinary, with Loathing of Food, Loss of Appetite, loose Belly, dark, brown, or black-coloured Stools, with a most fetid, or mortal Smell, I have seen many Instances in this Case, where Butter-milk alone has made a Cure when Medicines have failed. Where the Urine is thick, brown, sharp, hot, fetid, as it were putrified, frothy, and without Sediment; Sweat of the same Nature, and scanty sudden Eruptions of a black, livid, reddish, brown, or dusky Colour, which grow and spread suddenly, and are filled with a sharp Ichor, and often tend to Mortification or Sphacelation, from sudden and sharp slight Inflammations, which speedily arise in Blisters. Where the Blood is too fluid and dissolved, very red, and little Coagulation; where frequent Buboes and Purple Spots break out on the Skin; where the Mouth or Breath taste rancid, bitter, fat, sharp, or like burnt Oil or Sulphur; where the Jaws are intolerably hot, and a Taste like rotten Eggs; where there are black hot Eruptions, acute, sudden, and stubborn Inflammations and Suppurations,

Hatred

Hatred of Food, with Shiverings over the Body, hot, fetid, greasy, white Stools, ill Savour, and Driness of the Mouth, the Skin exceeding dry, and little Urine, &c. in all those Symptoms Butter-milk challenges the Preference, because it contains much Acid, which is opposite to both the alkaline and oily Acrimony. In Fevers attended with great Thirst, Heat, Anxiety, Tossings, Purples, Inflammations, Eruptions, &c. it is very allowable, but the Clear of a Posset of it and new Milk, is still better; for this cools, dilates, and moistens the Blood, and the Acidity checks the great Rarefaction of the Juices, and relaxes the Vessels.

But Butter-milk is highly injurious in the following Symptoms, which discover the Reign of an Acidity in the Blood, *viz.* where the Mouth, Breath, and Taste, smell sourish; where there is a moderate Thirst, great Hunger, and quick Digestion, a Longing after earthy Things and Absorbents, the Face and Body pale and cold, the Gums, Lips, and Jaws, white, pale whitish, Out-breaks on the Skin, the Guts grip'd, and the Skin pale and cold at the same time;

and white, four, greenish Stools; white, thick, Urine, which lets fall a Sediment; Skin white and loose; Sweat much and four; the Blood thick, black, or pale, where there are small slow Inflammations, several Swellings, &c. In those Cases all Milk is hurtful, but especially Butter-milk; for even a moderate Use of it may occasion fatal Symptoms and Effects. At whatever Seasons, or in whatever Climates, the former Symptoms are most visible and troublesome, it may be used. On the contrary, whenever the last Signs appear, it must be refrained, at least till they be gone.

I should now come to treat of Whey, which is the most thin and watery Part of the Milk stripp'd of both its Cheese and Oil; but on this I could expatiate to a much greater Length, than the Bounds of my intended Brevity will allow; only in short, raw Whey opens the Belly powerfully, purges off all fæculent gross Humours, dissolves the Salts in the Blood, dilutes and attenuates a gross fizy Thickness, sweetens it, and is therefore very beneficial in Obstructions of the Glands, Jaundice, Stuffings, or beginning Obstructions of the Vessels,
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of Liver and Spleen; does great Service in the Hippo, as it thins and dissolves the thick and grumous Blood, which distends, loads, pains, and oppresses the Viscera of the Lower Belly. It is well suited to melancholly Constitutions, and Persons liable to frequent and acute inflammatory Diseases, or to them who have Obstructions in their urinary Passages, or very brown, thick, scanty, hot Urine; to them whose Skins are frequently deformed with inflammatory, hot, red, weeping, or spreading Pimples or Eruptions, or with Scabs, Scales, and leprous Deformities; or to them who are often troubled with Loosenesses of white, bilious, frothy, fetid, acrid Stools, or who have their Lacteals furred up with Slime, or other hard Matter, or who have a perpetual Thirst. It is a Drink admirably fitted to Youth, hot Weather, and great Eaters of animal Food; it is good for them who drink much Wine, or after a Debauch of strong Ale or Beer; for them who are vexed with red pimply Faces: In a word, it incides and attenuates, it dilutes and deterges, it mundifies and clears the Passages, it penetrates and dissolves. Clarified Whey

may be made a suitable Basis for the most aperient, absorbing, attenuating, moistening, cooling, inciding, and diluting medicinal Decoctions. It is a vulgar Mistake to think, that such Decoctions presently ferment and sour ; herein they have only the common Fate of most other Decoctions now in Use, wherein the Force of Ingredients is so inconsiderable, as if the Compounder was afraid they should answer any valuable Intention ; but when we would have them answer any good Purposes, they should be loaded with the Ingredients dried, before they be boiled, that they may keep some considerable time. I have frequently ordered Decoctions in Whey, which have kept some Months without the least Prejudice, but rather to their Advantage ; for they have not only answered the Intent of a Medicine, but drank like generous Wine, and revive the languid Spirits.

Neither is Milk useful taken inwardly only, but it answers a great many external Purposes, as in nephritic Pains, colical Disorders from bilious Salts, indurated Fæces, Pains of the Colon, Rectum, or Anus, Flatulency in the great Guts, &c. Warm Glysters given of it do great Service ; a Wash

of it and Rose-water, beautify the Face and Hands, gives them a pleasant natural Colour. Feet, Legs, and Arms, washed with warm new Milk, become more soft, lax, and better prepared for the Reception and Eruption of the Pustles in the Small-pox; this disposes them for the Admission of a larger Share of the Disease, and gives a signal Relief to the nobler Parts, as Face, Mouth, Throat, Lungs, Pleura, Bowels, &c. A Fomentation of warm Milk relaxes the distended and inflamed hemorrhoidal Vessels, dissolves the coagulated or thick Blood, promotes Perspiration in the Parts, and eases Pain. This Fomentation eases the most racking Pains of the Gout, relaxes the contracted and pained Vessels, hastens and encreases the Swelling, dissolves the impacted Matter, promotes its Transpiration, and quickly relieves the Body by a regular Fit, especially if at the same time a Fever, or other Symptoms, forbid not a free Use of the most generous Wines. A warm Semicupium, or half Bath, of warm new Milk, eases the most violent Fit of Stone or Gravel, relaxes the Parts, and makes way for the Discharge of the Matter. A Fomentation

tation of it eases pleuritic Pains, Inflammations of the Muscles of the Belly or Throat, relieves from flatulent pricking Pains, gives great Ease in arthritic, or other fix'd or scorbutic Pains. New Milk dropp'd into the Eyes, and a Linnen Cloth doubled and dipp'd in it, and laid on the Part, eases the most excruciating Pains there, where there is an Inflammation, Redness, and Heat; but it will still be more effectual, if Rose-water, and the White of an Egg be added to it, and the Cloths often changed, that its Acidity trouble not the Eye. A Fomentation of it is also good in Pains of the Ear; but these being external Applications, not inward Uses, which I proposed to discourse of, I pass them, when I have added one word, that the cheefy Part of the Milk nourishes; its oily Part eases Pain, relaxes, digests, salves and smoothes the Intestines and Vessels from acrid Humours; its serous Part absterges and cleanses.

C H A P. III.

O F M A D E W I N E S.

*O f M E A D, M E T H E G L I N, and
H Y D R O M E L.*

TH E S E Liquors are much used in the northern Countries, where great Cold hinders the Growth of the Grape and Production of Wine ; but kind Nature has bountifully provided them with Honey, which they make into a spirituous Liquor with Water, and esteem it as much, yea some prefer it before Wine. Mead, Metheglin, and Hydromel, are all prepared from Honey, which is a sweet Juice exuding from the Flowers of all sorts of Vegetables, bitter as well as sweet, and sucked up from them by the Bees, and laid up in their Combs ; from some of them also do Children suck a Honey. Bees gather this Honey after the Sun is up, and exhaled the preceeding Night's Dew. Honey was formerly thought to have different Qualities, according to the different Plants or Flowers it was gathered from ; but later Discoveries have proved this to be false.

Honey

Honey is a natural Soap, attenuating, aperitive, loosening, cleansing, laxative, and stimulating, of great Esteem before the Use of Sugar, and in several Cases exceeds it far, as for a Pectoral, Diuretic, &c. and neither heats, dries, nor constringes till after Fermentation, for before that it is void of Spirit; for the Sun's Heat on that Juice of the Plant, produces not that whilst it remains in the Vegetable. But we must consider these three Liquors as they are after Fermentation, as also the other Made Wines. All these three are made with Honey and Water, and some Aromaticks, as Cinnamon, Ginger, Nutmegs, Cloves, &c. and fermented with Yest after boiling; the last is only Honey and Water boiled and barrelled close up without Fermentation. These are the chief Drink of *Russia*, *Muscovy*, *Lithuania*, and *Tartary*, and several good Housewives in *Britain* prepare and keep them yearly. Fermented Mead having the essential Oil and Salts of the Flowers from which it is gathered, broken, mixed with the Water, and reduced to subtile, volatile Spirit, becomes of the Nature of Wine when it is kept to a right Age, *i. e.* till it

be clear, fine, and of a pleasant vinous Taste, which if right made, it must be, considering that Honey is only the most essential, subtile, and fine Parts of Flowers; and for this Reason Mead must be a very wholesome Liquor, because it is a curious and chemical Collection of the best Principles of aromatic and cordial Flowers. Mead must be an excellent nervous Wine, increase the animal Spirits, and inflate the delicate Tubes with its volatile and exalted Parts, fit them better for vigorous Motion and Action; and as it affords Plenty of nervous Juices that will supply the Nerves of involuntary Motion, strengthen the Heart, promote Circulation, and prove a great Cordial, far beyond Brandy, *Aqua vitæ*, or *French Wine*, because their Spirits being stripped of their mucous Phlegm, and left naked, they soon exhale and leave their Phlegm to thicken the Blood, load the Vessels, and weaken the Fibres; but the Spirits of Mead and Metheglin, being still more wrapt up in the oily Parts, continue longer in the Body, invigorate the Solids, and keep them longer in Play. *French Wine* indeed has this Advantage, that it

abounding

abounding with Tartar, that Tartar gives a greater Stimulus to the Vessels, and by its Roughness corrugates and draws up the Fibres more, whereby they become stronger, and keep their Tone longer, even when its Spirits are spent. It also abounds more with subtile fine earthy Parts, which nourishes and makes up the Waste and Abrasions of the Vessels. For these Reasons Mead approaches nearer the Nature of *Spanish* and *Portugal* Wines, only it has less Earth, and their Earth is too gross to answer the End of true Nutrition. Mead is excellent in all Languishings and Decays of Nature; it is a Milk for old People, a great Strengtheners of the Solids of the Phlegmatic, an Attenuater of the Blood, an Invigorater of the loaded abdominal Vessels, and a powerful Reviver of the Spirits of melancholy Persons. As Cyder is chiefly adapted for Summer Service, so is this for Winter Uses; as Cyder is to be drunk with Meals, and as an Afternoon cheering Glass, so this answers best a Morning Whet. It is a powerful Diuretick, cleanses the Kidneys, Ureters, and Bladder, of all sandy, fabulous, mucilaginous, gravelly, and exotic, tardy Bodies.

dies. As it affords Plenty of animal Spirits which invigorates the Nerves and Fibres, they attenuate, mix, and prepare the Blood for Secretion and Excretion; by this Property, and its Multitude of essential Salts, it scours the Glands and Lymphatics, cleanses away the Viscidities of the Blood; it fortifies the Stomach, and promotes Digestion in the Bowels, by its gently stimulating the muscular Fibres, attenuates the Viscidities lodged in the Glands, and affords nervous Juice. But Hydromel, that is, Honey and Water boiled, and kept unfermented, with Cinnamon, Ginger, and Nutmegs, is a powerful Cleanser of the Lungs; it helps Expectoration, and sheaths the sharp prickling Salts which tickle the trachæal Glands; for it not having undergone Fermentation, abounds with many oily Parts and Salts, which not being so minute and subtile as in the other, prick not, nor stimulate the Nerves and Glands; neither are the oily Parts so gross as to cloy and load the small Vessels of the Lungs, but soften and smooth them, sheath the sharp irritating Salts, and smooth the Insides of the Vessels with a noble balsamic *Litus*, which defends them
from

from Pungency and Irritation, till they recover Strength and Elasticity, whereby they shake off and propel any viscid or saline Moisture which might stuff, load, or tickle them. Thus is Honey and Mead of unspeakable Service to the Diseases of the Breast. And also where the Bowels are sluggish and inactive, and do not answer; or where they are too dry and stiff, want glandular Moisture to expedite the Passage of the *Fæces*, this Mead is good, because its gross Salts prick and stir up the Intestines to their Office, or its gross Oil lubricates and softens them, causes the Glands to give way to the Impulse of the circulating Blood, and their excretory Ducts are softened and widened; hence a larger Quantity of intestinal glandular Juice, whereby Stool is provoked. But vinous Mead has not this Effect, because the Fermentation has subtilized its Oil and Salts so much, that they readily get through the first Passages into the Blood, without producing that Effect. The *OEnomeli* (*i. e.* Wine and Honey mixed) of the Antients, will still make the Wine more pectoral, *i. e.* the Oil and viscid Parts of the Honey will obtund, or sheath up the Tartar of the
Wine,

Wine, so as it will not prick nor tickle the Glands of the Throat, to excite a troublesome Cough; the Wine on the other hand will make the Honey more cordial, stoma-chic, and of quicker Digestion.

Mead and all Preparations of Honey are most disagreeable to choleric Constitutions, because it soon degenerates into the Nature of Bile, causes terrible Gripes, bilious Cholicks, and not seldom Death; it is also hurtful in ardent Fevers, because its Spirits will increase the violent and impetuous Motion of the Humours, and exasperate the Disease. It is no less unsuitable for hot Summer Weather, because then the Solids are lax, Digestion slow, and it lying on the Stomach, meets with the Biles, and turns into an Acid, which presently raises a violent Cholick; so that as Cyder is adapted for Summer, so is this for Winter. Mead drunk before it be fine, palls the Stomach, goes slowly off, causes Belchings, Flatulency, Indigestion, *Nausea* and Vomiting, from the Viscidity it had not yet deposited, wherein the contained Air rarifies, expands, and causes an Explosion; and these Viscidities meeting with the Bile, easily turn into the

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same, and so cause bilious Vomiting, Pain in the Bowels, and Looseness; and because it contains both much Spirit and viscous Parts, it easily causes Drunkenness, hard to get off.

C H A P. IV.

Of BIRCH WINE, GOOSBERRY WINE, COWSLIP and ORANGE WINES.

BIRCH Wine has long time deservedly obtained and retained its Character in the World, for it is full of a very delicate Salt or Tartar mixed with a very thin Phlegm, has little of that Viscidity in it which makes all other Made Wines so flatulent and unwholesome; it is of the Nature of *Rhenish* Wines, its solid naked Tartar or Salts make it highly serviceable in several obstinate Disorders, as in any Loading, Stuffing, or Infarction of the renal excretory Vessels, or Lodgments of small Stones, Gravel, Sand, or Slime; it dilutes the lodged Matter, increases the Quantity of Urine, stimulates and invigorates the Vessels to shake them off, dislodge and expel

pel them, and so cleanses and clears the Channels, and frees the Drinker from much Pain; because of the Minuteness and Solidity of its Salts, and Thinness of their Vehicle, it dilutes a fizy Mass of Blood, dissolves its viscid Coagulums, washes off the Slime and *Mucus* from the Insides of the Vessels, clears off Obstructions from the Glands, opens the obstructed Channels, and adds a fresh *Momentum* to the Blood; and because its Salts stimulate the Vessels, and also its Spirits afford Juice to the nervous Tubes, the Solids are invigorated, strengthened, and act with more Force and Briskness over the Fluids, whereby the last are attenuated, mixed, fitted for Secretion, Excretion, Nutrition, and Evacuation. And as it both irritates and raises the Solids, dissolves and mixes the Fluids, scours the Glands, and provokes Urine, it comes in good Play against Dropsies, Cachexies, an indolent and bulky Habit of Body. When the Blood is fizy, sluggish, and inactive, and the Lungs unable to repeal its Settlement, and loading their slender Tubes with a thick viscid Phlegm, either in the tracheal or pulmonary Vessels; the first cau-

sing a Cough, and difficult Expectoration
 of a thick tough Phlegm; the second a
 Distention, Dilatation, and invincible Load
 of fizy Blood, disposing the Lungs to Tu-
 bercles, Hydatides, or Impostumation; the
 Tartar of this Wine cuts, separates, and
 dissolves these Viscosities, excites the Vessels
 to put forth a great Force, Action, and Elasti-
 city, and at the same time its pure Phlegm
 dilutes the Blood, thins the Humours, and
 disposes them to be thrown back into the
 Vessels and Blood, till they be reduced to a
 subtile Matter fit for Perspiration, or Eva-
 cuation by Urine, and then they are expel-
 led, and the phthysical Person restored; for
 this Purpose it excels *French Claret* (tho'
 the thinneſt of all Red Wines) because the
 last has too great a Restrictingency or Stipti-
 city in it, whereby it contracts the Vessels,
 makes them narrower, and shortens their
 Diameters, as the viscid Cohesions are ra-
 ther wedg'd in, and the Disease made
 worse. It exceeds White Wine also, for
 this has too much and too naked Tartar,
 which shears, abrades, and wastes the Ves-
 sels, till it bring the Body into a Cachexy.
 But of all Birch Wine, that is best for this
 Purpose,

Purpose, which has a Quart of Honey added to each Gallon of Juice. As Birch Wine is a great Diuretick, it is very serviceable in a Strangury, or partial Obstruction of Urine from a Viscidity of the Blood, or Infarction of the Parts, because it clears the Passages, removes the obstructing Causes, and brings off Urine freely. It is of good Use in scorbutick Habits, contracted by Intemperance, an unequal Mixture or Siziness of the Blood for these Reasons. It is also a good Gargle for tumefied Tonfils or Glands of the Mouth, causing Spitting and Discharge of much ropy Phlegm. In a word, it is the most inoffensive and truly useful of all our factitious Wines.

But seeing it is so powerful a Diuretick, Thinner of the Blood, and Promoter thereby of Perspiration, it is injurious to very thin, lean, and hectic Bodies, because it promotes a Waste and Atrophy too much. Neither is it to be used in a Strangury, from the Saltness and Sharpness of the Blood causing an Inflammation of the Parts, and Heat and Scalding of Urine; for all Diureticks stimulate those Parts, encrease the Afflux of Blood to them, and exasperate

the Symptoms. It must also be refrained in a *Diabetes*, seeing it is neither restraining, anodyne, nor balsamic, and so cannot thicken the Juices, nor contract the Strainers. An immoderate Flux of the *Menses* forbids its Use, seeing it stimulates the Parts, thins the Blood, and promotes the Evacuation. Too keen an Appetite calls for greater Blunters, and not such a brisk Fortifier of the Stomach. Too great a Fluidity or impetuous Motion of the Blood, make its Use suspected, as promoting both these. Too much Labour, Exercise, or Evacuations, render its Use hurtful, because it is too thin and stimulating, and depauperates the Body too speedily of its nutritive Juices. Too low a Diet, except of tenacious Foods, agrees not with this Drink. Gooseberries contain very much essential Oil and fine Salt; besides, their Phlegm therefore affords a good Wine, and the best Brandy our Island makes. This Fruit when green, abounds with acid Salt and much Earth, which give them that sour stiptick Taste, and make them pungent on the Tongue, but as they ripen, the Oil abounds more, unites with and sheaths their Salts; then

then are they less astringent, more viscid, have a better Taste, and turn sweet. Gooseberry Wine made of the Berries before they be full ripe, well fermented, and kept several Months till it is clear and fine, is a most delicious, cooling Summer's Draught, adapted especially to young Persons, and the bilious (and sanguine) whose Bodies, from the Thinness, Equality, and rapid Motion of their Blood, and Force of their Solids, are easily over-heated, and too great Waste by Perspiration promoted. From the Abundance of its Salts and Oil, it becomes very spirituous; but its Salts being a little acid, it is tart, and thereby pricks the Stomachs, promotes Digestion, helps Nausea, Belchings and Vomitings: For the same Reason, it purges up the pall'd and too much relax'd Solids of the Body, invigorates the Force of the Fibres, keeps the Blood in better Play and Mixture, prevents its running into viscid or grumous Cohesions, or being too profusely perspired thro' the relax'd Skin; and mix'd with Water, it makes a very agreeable sharp Drink in ardent Fevers, especially where an alkaline Acrimony prevails in the Blood. It quenches

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Thirst;

Thirst; and where the Blood is too fluid, or rarified, it checks its Rarefactions, and gives it a better Consistence; or the Juice of the unripe Fruit, mix'd with Water or boil'd in Drink, stops a Looseness in Fevers, and is a great Astringent in spitting of Blood. It is also good in putrid Fevers, or where there is a Tendency of the Parts to a Mortification. It is no less serviceable against such Poisons as rarify the Blood; relax, dilate, and distend the Vessels beyond their due Tone, as Poppies, Opium, &c. or for such Poisons as leave a Viscidity, or render the Juices tenacious, and stupify, as Hemlock, Henbane, &c.

But both Berries, Wine, and Decoction, are injurious to the Melancholick, because of their Acidity and Stipticity, which corrugate their Fibres, and thicken their Blood. They are also disagreeable to such as have a gnawing corroding Pain at their Stomach, from an acid Humour too plentifully pour'd in, or skulking there. They are apt to raise a severe Cholick, where they are used by those who have an Acidity of Humours in their Bowels; or where the Blood is too acid, they thicken it more.

Currants

Currants have little Oil, but much Salt and Phlegm in them; they afford a Wine that, when it has been bottled two or three Months, is of a good Body, delicious Taste, a beautiful ruby Colour, and rich. It is a delicious cooling moistening Drink in Summer, and by its Tartness it corrugates the muscular Fibres of the Stomach, and helps Digestion. Its Salts make it a good Detergent, (if not over-loaded with Sugar, or ill fermented, or drank before it be fin'd) it purges up the relaxed Fibres in very hot Weather, and checks too great a Perspiration; or if the excretory Ducts of the Skin be so pall'd, that they cannot expel their contained Matter, but its Thickness, and more viscid Parts, fur up the Channels, it stimulates the Fibres, cuts and divides the gross Humours, and promotes a slow Perspiration. It is good to check the Redundancy of the Bile, by its acid Salts, and by its Restrictingency it contracts the Strainers of the Liver, and makes the Vessels narrower, so as less Bile is separated and poured into the Intestines, and more of it discharged with the other Humours by the Skin. It is good also against an oily Acrimony in the

Bowels

Bowels or Blood, nidrous Stinking, oily Belchings and Loathings. It is proper in a Fulness and Stuffing at Stomach, and a Weakness and Laxness of the Bowels. A moderate Glass of that which is old, strong, and fine, agrees with phlegmatick, unweildy Bodies, because of its Plenty of Salts. It is no less useful to the Cholerick, as its Fluidity mixes with, and corrects the Bile, and prevents the too great Acidity and Rarefaction of the Blood; for the same Reason it is good after Laudanum, Opium, or too great a Dose of Poppy-seeds, or any stupifying Poisons. It is a proper Drink in foggy, close, sultry, hot Weather; and is chiefly adapted to Youthhood.

Melancholy Tempers cannot so well bear it, for the same Reason that Gooseberry Wine disagrees with them; neither is it eligible in cold Weather, because it chills too much, and as it cools moistens greatly; old Age should not use it, for their Circulation and Heat is languid, and their Perspiration answerable. In Pains of Stomach or Bowels from an acid Humour, it is hurtful, being full of acid Salts; and all Disorders from Acidity of the Blood are encreas-

fed by it ; therefore arthritic or rheumatic Pains from a Sharpness of the Blood, are exasperated from its Use ; and Diseases arising from a Thickness of the Blood, forbid its Use.

Cowslip Wine has a grateful enough Taste ; it is cooling from the Lemons added to it ; it is a proper Draught for the Summer time ; it is also good in great Anxiety, Restlessness, and Tossings, being of a soporific Nature, and gently composes to Sleep. It is also a little detergent, and promotes Expectoration, somewhat cordial, and a little stomachic ; the last is owing only to the Lemons : But it is very viscid, and therefore occasions Flatulency in the Bowels ; therefore such as are liable to flatulent Cholicks, should not meddle with it. If drunk too freely, it taints the Blood with a Viscidity, which fouls the Glands, furs the Channels, and begets Obstructions ; the Sugar and Lemon make it a little diuretic ; phlegmatic, unwieldy, cachectic, and hydropic Persons, or such as are liable to Obstructions of the Glands, and white Swellings, should not touch it, both because of its Viscidity and soporific Tendency, which
relaxes

relaxes the Solids, which should be drawn up, strengthened, and invigorated. It is naught for old People, whose Juices are already too thick, and their Perspiration too slow; a foggy Air, rainy Weather, and marshy or wet Places, forbid its Use, because it relaxes more, and adds to the Indispositions arising therefrom. Its Use is chiefly to please the Palate at the Expence of running the Venture of some bodily Disorder.

Orange Wine has a pleasant Taste, is a lesser kind of Cordial, and strengthens the Stomach, by stimulating softly, and drawing up its Fibres, and begets a better Appetite. It is chiefly useful in a Morning, to wash off the Slime from the Stomach, raise its Tone, and correct the Plenty of Bile; it is somewhat diuretic; but this is also liable to Viscidity, and so may cause Gripes and cholical Complaints, both from its Coolness and Viscidity, is therefore no ways fitted for a cheering Cup. It is best in Summer, or hot and dry Weather, to bilious young People, but not suitable to the aged, phlegmatick, and cachectic Constitutions.

Elder Wine is another excellent factitious Wine, which must not be forgot; for did
either

either my Design or Time allow, I could write a whole Book of different Sorts of Wines which might be made from the sundry Parts of this noble, simple, and despised Shrub, which though the most hated, and most industriously rooted out of both Gardens and Fields, is yet the most useful and medicinal of all others to human Bodies; bountiful Nature having provided it as a *Panacea*, which affords Relief to the most Diseases we are liable to, and that with little Labour and Expence, which should make us admire it, and value it the more. Elder Wine differs in its Properties, according to the Ingredients wherewith it is made. That made with Raisins of the Sun is more sharp, thinning, cleansing, moves the Belly, and opens Obstructions more; that made with *Malaga* Raisins is more healing, pectoral, soft, smoothing and sweetening, because they are much fatter, abound with Oil and Balsam; but that made of only the Juice of the Berries, boil'd and scumm'd, and Sugar put to it and fermented, barrel'd up, well settled, then bottled off, and a Spoonful of good Brandy put to each Bottle, is the richest, strongest, and best Wine I

ever drank. It will keep good many Years, and has the true Virtue of the Elder in it, because it is not chang'd by long and high Fermentation and Distillation ; for these separate and subtilize its Spirit, alter its natural Properties, and leave it no other Virtue but what is common to other spirituous Liquors, however some may boast of *Ar- cana's* to bubble the Ignorant out of their Money. But seeing this Wine is mostly made with Raisins, I shall consider first the Virtues of them, then of the Berries. Raisins are both softening and adhesive, and have a special Activity and Disposition to Motion, when joined with a suitable Configuration of Parts ; by the first of these, they thicken the too thin and serous Humours, soften the saline, sharp, and tickling, check the impetuous Motion of the Blood, from a Sharpness, Pungency, Nakedness, and Multitude of its Salts, which they sheath, blunt, or absorb ; and by their last Property they are possess'd of subtile Parts, which are proper to mix with, attenuate and carry away the Contents of Abscesses and Ulcers ; they also abrade, and take along with them those mucous and viscid Collections of Hu-
mours

mours, which adhere to and obstruct the Vessels. The first of these makes them excellent in sharp troublesome tickling Coughs, arising from too great a Serosity and Saltness of the Blood, because they sheath up and blunt its Acrimony, make it thicker, of a more equal Temper, and give it an adhesive Quality, whereby it is more nourishing, soft, and balsamick, and affords a soft, oily *Litus*, to the naked or abraded Vessels, induces a more indolent and pacific State to them, their *Stimulus* being check'd or remov'd : For the same Reason are they no less suitable to scorbutic Habits, where there is much Acrimony in the Blood discovered by great Itching, cuticular Eruptions and Erosions, Tetters, Erisipelas, &c. because they, by sheathing the Salts, remove the *Stimulus* of the Vessels, prevent their Abrasion and Consumption, therefore are they deservedly reckoned among the Sweeteners of the Blood, and suited to lean, thin, hectic, scorbutic Bodies. The Rise of a Cough from the Saltness, Sharpness, and Serosity of the Blood, is easily known from the constant uneasy Tickling of the Throat, from the Thinness of the Spitting; it is also
also

also often sharp or salt, from the Quickness of the Pulse, from the Liveliness and Briskness of the Person's Constitution ; and lastly, from a Roughness perceived in the Throat and Breast. By this Disposition they are very useful in Catarrhs, which come from the Thinness and Sharpness of the Juices, and their pricking of the Vessels, and running speedily through them ; for the Secretions are diminished by an accelerated Circulation ; yet as true it is, they are increased by the Thinness of the Blood, Excoriation or Abrasion of the Insides of the Vessels, and the Briskness of Circulation, attended with a constant Irritation of the containing Tubes. Hereby they come in play for rheumatic, or other fix'd or erratic Pains, occasioned by the Thinness and Saltiness of the Blood ; for by the first, its globular Parts being less, it enters the smaller Vessels, which being conic, it must stop, till by their Force it be attenuated. During this Delay, its Salts attract more, and act with a stronger *Stimulus* upon the Capillaries, whereby they contract, straiten, and hinder the free and ordinary Circuit of the Blood. Hence an Action of the Blood
 against

against the Vessels, and of them against the Blood, and of the Parts of the Blood against one another, till the thinner Parts escape, and the thicker are stop'd, which is the Cause of the Inflammation and Pain of the Parts; but the *Periosteum* and Membranes about the Joints, having the smallest Vessels most sensible, and least dilatable, they will be the most sensible, fittest, and most susceptible of this Misery. Pains from this Cause are discoverable from the Signs of a dissolved, sharp, and salt Blood, and also by Night Coughs, slow Fevers toward Evening, and Defluxions on some Parts; because of their temperating and sweetening the Blood, they are useful in Leprosies, Scurff, and Dandriff, of Head or Body; their softening, sheathing, adhesive, and pacific Quality, makes them a fit Ingredient in Venereal Cases, where the Juices are very salt, and the Parts heated, excoriated and pain'd; for the same Reason they are justly join'd to Decoctions, against hot Rheums falling down on the Eyes, or a gnawing Pain of the Stomach, from too much acid *Saliva* spued out by its Glands, or in Cholicks from acid Salts; pricking, stimulating, and in-

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flaming the Intestines ; but in all these Intentions, *Malaga Raisins* must be preferr'd. Raisins, by their attenuating and deterging Property, are highly necessary and useful in promoting Expectoration, and dislodging Viscidities in the *Bronchia*, and cleansing away the adhesive *Mucus* which lines and loads either tracheal or pulmonary Vessels, and as they are serviceable in attenuating, mixing, throwing back into the Vessels, and carrying off the stuffing or obstructing Slime or *Mucus* in the Lungs, they act the same kind Part to the Kidneys and urinary Passages, cleanse them from Sand, Gravel, Slime, or small Stones, take off also that adhesive Viscidity which furs up, straitens, or obstructs the renal secretory Passages, and so prove diuretick. Hereby they are beneficial in Stuffings, Straining, or Obstructions of either hepatick, splenetick, pancreatic, or mesenteric Vessels, where a slow and weak Circulation, a tenacious Juice, or a lax Fibre, has caused a furring up of the Infides of these Vessels. In an Asthma, from an Infarction of the Vessels with thick or tough Phlegm, they attenuate, cut, and prepare it for Expectoration, and gently invigorate

vigorate the Vessels against receiving such a Load ; they are also good in great Hoarseness from a Load of fizy Juices upon the tracheal Vessels ; for these Reasons they are greatly profitable in hydropic or cachectic Disorders, where from the Thickness of the *Lympha*, its Indisposition to Motion, and the Weakness, Laxness, and Distention of the Vessels, the Lymphaticks are burden'd ; they are a fitting Ingredient in Meat or Medicine, against Collection of Matter, Defluxion or Apostemation in any particular Part, or in any great Flux of thick viscid Matter upon any Ulcer or Sore, which prevents its healing : In antiscrophulous Intentions, they claim a Right of Assistance ; in the *Fluor Albus* they help to scour and contract the relaxed Glands and sweeten the Blood ; but in all these Intentions we must make choice of Raisins of the Sun. Raisins are injurious to the Choleric, but agree better with the Aged, Weak, Hectic, and Thin. Elder Berries contain much Oil, some volatile Salt, more fixed Phlegm and Earth ; they are more acid than Dwarf-Elderberries ; the Juice of the Berries is not only medicinal, but being made into Wine, fermented

and kept till it be fined and cleared, is a delicious Liquor, whose Oil and Salts being attenuated and ground down from their gross *Moleculæ* by its intestine Motion of Fermentation, afford much nervous Juice and animal Spirits; its fine terrestrious Parts at the same time help to supply the Waste of our Bodies sustained by Labour, Exercise, Watching, or Fasting; its gross Oil lubricates the Springs of the Fibres, supply such as are dry'd and parch'd, or too much contracted, corrugated, or convulsed. It sheaths or blunts also the Salts of our Blood, when they are too sharp, naked, or much; or if the Blood be too viscid, fizy, or gross, the Salts in the depurated Wine incide, attenuate and separate its Cohesions, fit it for a brisker, fuller, and more equal and universal Circulation, whereby its nutritive Principles are separated and set at Liberty from the gross and useless Parts wherein it was entangled, and helps to expel the excrementitious Juices; not only do the Salts cut and divide the grosser Parts of the Blood, but they add a *Stimulus* to its containing Tubes, whereby they exert and act with greater Force, swifter Motion and Elasticity, which

which not only adds to the Ballance of the Solids against the Fluids, but to the better Mixture of the Blood, and prevents that Attraction of its grosser Parts, which it always discovers in a slow Circulation; and to all these Advantages of the Earth, Oil, and Salts, the Phlegm adds its Assistance, being a Vehicle to carry them into the Blood, and promote their Usefulness there. Elder Wine suits the thin, lean, hectic, hyp'd, aged, corpulent, cachectic best, especially in Winter, cold Weather, or temperate Air; it is less agreeable to the Choleric, especially in very hot Weather, lest it encrease the Quantity of Bile, and procure Gripes or bilious Cholicks.

But let us consider it a little in a medicinal Light, and that only as it is a Drinkable; because should I consider the sundry Preparations afforded by the Elder-Tree, both for internal and external Intentions, I should wander from my Purpose, and enter a large Field. This Juice abounding with fixed Salt, is admirably fitted to cleanse and pass off by the renal Glands, which gives them a *Stimulus*, encreases the Motion of the Blood in them, and at the same time

accompanied with a softening anodyne Oil, which lubricates the Vessels, prevents any sensible Irritation from the Salts, therefore will it be a notable Diuretick, provoke much Urine, and cleanse the Ureters, Kidneys, and Bladder, from fabulous Matter, small Stones, Sand and Gravel ; because whatsoever irritates the urinary Passages, calls a greater Afflux of Blood to them and the circumjacent Parts ; not only this, but the *Momentum* which the fixed Salts add to the Blood, and the Rarefaction thereof by the volatile Salts ; therefore does this Wine provoke the *Menses*, when obstructed either by a Toughness of the Juices, or great Scarcity in the uterine Vessels, or the Resistibility, Contractedness, or Flaccidity of the Tubes themselves. As it encreases the Aflux of Blood thither, and fills the Vessels, therefore is it a fit Draught where the *Lochia* are suppressed, or the Secundine retained, as also in weak or slow Labour. As it irritates the Kidneys and urinary Channels, it is good in any partial or total Obstruction of Urine. Its powerful Operation upon the urinary Passages was carefully observed and admired long since by *Forestus*, *Petræus* *Nosolog.*

Nosolog. Matthiolus, Mullerus, &c. Its emmenagogic Virtue is proved and applauded by *Quercetan, Gabel Shover, Dioscorides, &c.* who also found the Success of sundry Preparations of the same Shrub in curing the *Menses nimios*. This Juice having Plenty of Salts and Oil, the first makes it a great Opener of Obstructions in the Liver, Spleen, Mesentery, *Pancreas*, and other Parts, and so a great Cure of the Jaundice, Dropsies of all sorts, Cachexies, Leucophlegmatia's, and Scurvy; for which Intentions it comes to us recommended by *Mindererus, Quercetan, Dioscorides, Forestus, Crollius, Blochwitz, Nicholas, Mullerus, Benediēt, Veronensis, &c.* as it cuts and thins gross, thick, earthy Humours, stimulates their Vessels, and gently eliminates the atrabiliary Matter by Stool, and at the same time refreshes the Person, elevates his Spirits, and invigorates him; it must be highly serviceable to melancholy Tempers. Not only is this Juice an Alterative, but a gentle Purgative and Provoker of Sweat; by the first it carries off the *Colluvies* of Water from the Belly, purges Phlegm, Choler, and Serum, eases the burdened Lymphaticks of their Load, by

its first attenuating the fizy Serum, and then purging it off. As it is a Sudorific (which is owing to its volatile Salts) it is good in obstructed Perspirations, or in Colds therefrom, or in intermitting Fevers after a Vomit, because it encourages Sweating, attenuates and breaks the gross Humours, disposes the Urine to deposite its Sediment, prepares the Body sooner and with greater Safety for the Bark. In time of the Plague, or other epidemick Diseases, a Glass of this Wine is good before Dinner or Supper; *Aljunus* says the *Egyptians* use the Oil of Elder thus; they dip a Sheet in it, then squeeze it out and wrap up the infected Person in it, and so lay him in bed to sweat, whereby they cure Multitudes; they promote and ripen the Buboes with a Cataplasim of Elder Flowers and Honey, or a Liniment of their Oil, Honey, and *Sal Armoniac*. With Powder of Elder Flowers and Leaves, or with roasted Onions and Rob of Elder; or of Elder and Borrage Leaves, Mustard-Seed, and rancid Nut-Kernels. When the Ulcers are broke, they dress the Ulcer with juice of Elder Leaves and Honey, or Oil of Elder Kernels and Turpentine.

Turpentine. In pestilential Fevers the Juice is no less useful, as it promotes a *Diaphoresis*, fortifies Nature, refreshes the Spirits, and is an Antidote against Infection ; for its Vinegar is a Preservative in Health, and destroys the Exhalations of diseased Bodies. In burning Fevers this Vinegar, with a little Sugar, and mixed with Water, cools much, cuts the gross and tough Humours, opens Obstructions, quenches Thirst, refreshes, and cleanses off much Humours. *Aljunus* says that Elder-flower Water or Wine, is the most excellent and familiar Medicine used by the *Ægyptians* in the Small-pox. The Oil of the Berries is exceeding softening and anodyne, therefore is a Fomentation of its Flowers admirable in pain'd, swell'd, or inflamed *Hæmorrhoids*. This Wine cures Fits in Children, by evacuating that black, yellow, putrid, or acid Matter which laid in the Belly, pricked and pained the Bowels. It is also proper Drink for the Nurse, in this Case, to take off the Sharpness, Saltness, or Serosity of her Milk. Those come to Age, will find their Advantage in using it, to sweeten the Blood, provoke Sweat, open the Belly, afford nervous Juices,

Juices, and check the irregular Incurfions of the Spirits into fome Nerves and Mufcles. Its volatile Salt and Spirit, and fudorific Property, make it ferviceable in Apoplexies and Palfies. As it provokes Sweat, aétuates the Blood, cleanses the Glands, and affords nervous Juice, it is good in Dulnefs of Hearing, or Deafnefs from grofs Humours, relaxing the Drum of the Ear, or loading the auditory Nerves with grofs fizy Juice, as it thins the Blood, fcours the Glands, and purges off ferous Humours; for the fame Reason it is proper for Rheums on the Eyes. It cleanses, dries, and heals Inflammations, Tumours, or Ulcers of Nofe, Mouth, or Throat, becaufe it fheaths the Salts, deterges the Veffels, fweetens the Blood, and caufes a *Diaphoresis*, therefore it is good in Scurvy, Leprofy, Scales, or Dandriff. In Blood Spitting it thickens the thin Blood, fweetens the Salts, and affords Balsam to the Veffels. In an Afthma, or Difficulty of Breathing, from a Stuffing of the Lungs with viscid Phlegm, or from the Sharpnefs of the Blood contracting, ftimulating, and convulfing the Veffels, it cuts, attenuates, and thins in the firft Cafe, and blunts, fheaths,

sheaths, relaxes, and pacifies in the last. For the same Reason it is good in a Cough, caused either from the Grossness of the Humours, Sharpness of the Salts, or Thinness of the Blood ; or in a Hoarseness from the Stuffing of the tracheal Vessels with a fizy Slime, or from a Driness of the Parts ; especially in that Hoarseness which attends ardent Fevers, it is good if mixed with Syrup of Violets and Water. In a Bastard Pleurisy, or Consumption, it is very beneficial ; for in the first it attenuates and wastes the gross and flatulent Humours by Sweat, in the last it cleanses the Ulcers, sweetens the Blood, blunts its Salts, lines the Vessels with a balsamic *Litus*, and helps to heal them. In Syncope and Fainting it revives the Spirits, takes off Swooning and low Spiritedness. The Spirit of Elder-Berries (like Brandy) or Wine made of the dried Berries, strengthens a weak, and cures a flatulent Stomach, carries off the Phlegm, and helps Digestion, stops the Belchings and Vomittings of a lax and cold Stomach. This Wine cures and prevents flatulent Cholicks, by helping downward pituitous, vitrious, and flatulent Humours ; therefore it is also good

good in Worms, especially if Bitters be infused in it. In all Fluxes of the Belly, *Crollius*, *Quercetan*, and *Wolffius* pretend a great Secret of the Juice of the Berries, *e. g.* Flower made into a Paste and baked, then pounded and baked again with fresh Juice, and so a third time; one Dram of this, with a little Nutmeg in a soft roasted Egg, they say, cures the most obstinate Looseness; but it is so astringent, that they gave two or three Purges of the Syrup of Elder-Flower made with Elder-Flower Water. In a great Constipation, *Hippocrates* and *Ægineta* recommend Juice of Elder Leaves, or their Water with the Syrup of the Flowers. There is also an hysterick Spirit made of Elder, which cures Vapours, brings down the *Menses*, expells Birth and After-birth, *Hippocrates* cured most uterine Disorders by Things prepared out of this Shrub, as *Hydrops Uterinus*, suppressed *Lochia*, Inflammations or Ulcers of the *Uterus*, &c. Arthritick and rheumatick Pains receive great Relief by attenuating and sweetening the Blood by gentle Purgation and Sweating; these the Elder afford. Thus I have given a short Detail of the Benefits the Elder Tree
affords

affords us, by a Wine either of the Flowers (which tho' fetid, yet its Usefulness fully compensates its disagreeable Taste) or Juice of the Berries, or of the dried Berries, or Juice or Syrup of Leaves or Flowers; I might have enumerated several others warranted and recommended by incontestible Authority, should I not be too tedious; I have omitted its external Uses, which are as numerous as its internal. The bad Effects of this Wine may be gathered from what is said in the first Paragraph.

C H A P. V.

Of R A S B E R R Y - W I N E.

OF all our Made Wines, those of Strawberries and Raspberries are most delicious to the Taste; they lightly and pleasantly stimulate the Nerves of the Mouth and Nose with a most agreeable Smell and Taste, which proceeds from a Mixture of their essential Salt and fine Oil, for the Principles of both those Berries are very near the same, only Raspberries contain more fine Oil, and the other more Phlegm; therefore I shall briefly consider them promiscuously.

These Wines are very proper and reviving in Syncope, Faintings, or Swoonings, because they gently and pleasantly tickle the Nerves; their mature and attenuated Oil and essential Salt, being by Fermentation reduced to a subtile Spirit, pierce the Interstices of the Vessels, raise the Spirits, afford speedy Supply of some nervous Juice which invigorates their Springs. In scorbutic Disorders, the Use of those purify and sweeten the Blood, dilute or obtund its Salts, give the Fibres a better Tension to promote a due Mixture of the Juices. In nephritick Pains, they sweetly stimulate the secretory Ducts of the renal Glands, lightly prick the Membranes of the small renal Basons, whereby they being excited and invigorated, shake off their stagnating, attracting, and cohering Load, and free the Parts from Pain; the Phlegm of the Wine at the same time, has no small Share in diluting and attenuating the Slime or Sand in the Kidneys. In Rawness, Weakness, and Indigestion of the Stomach, the agreeable Titillation of these Wines gives its Coats a better Tension, elevates their Spring, and fortifies it. Their slight Astringency, together with their

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sweetly

sweetly warming Spirit, make them proper in Loosnesses, and too great Discharge of the *Menses*; their Plenty of make them more cooling and moistening than other Wines, therefore are they preferable in Thirst. As they are cordial and cooling, they and Water mixed make a good reviving Draught in ardent Fevers; as they cool and moisten, they are very proper for warm Weather, young People, bilious Constitutions, in too sharp or fluid a State of the Blood, or where the animal Juices are too much agitated (I know of no bad Effects they have, except they be drank to Excess, which is rarely the Case in drinking of Made Wines) but here we would be understood as speaking only of small Wines of this sort.

DISCOURSE

DISCOURSE III.

C H A P. I.

Of B R A N D Y.

ALTHO' neither *English* Malt nor Molossos Spirits come up to the Goodness of Brandy, yet the Fault is not in the Grain or Fruit from which they are extracted or made, but from the different Manner of their Preparation, Preservation, or Fermentation; for both Grape and Grain consist of, and afford the like Principles, *viz.* Oil, Salt, Phlegm, and Earth, only they differ as to the Quantity and Connection of those Principles; for the Grain has them more closely and firmly united; hence the Necessity of a double Fermentation to swell the compact earthy Parts, make them more spongy and porous, and so disengage, break, and subtilize the oily and saline Parts that they may be separated and extracted from the more gross and earthy. These Spirits differ also in respect of their
 Separability,

Separability, Rarefaction, and Volatility. Thus some Wines that are stronger bodied, abound more with Sulphur and Salt, afford less Spirit than others that are thinner and appear weaker; for the spirituous Particles of the last are much smaller, lighter, and finer, and are less entangled in a Viscus; *i. e.* their Spirits are more disposed to Motion, rise more readily and fully off the Earth and Phlegm wherewith they were mixed.

Spirits of the Grape or Grain, are the whole Oil or Salt of these Vegetables, broken and reduced into fine subtile and volatile Particles, smaller and lighter than the Phlegm wherewith they are mixed. These Spirits are neither acid nor alkaline, but of an indifferent Nature as to both, which *Boerhaave* has sufficiently proved by several Experiments.

That there is no other Difference betwixt Brandy, Molossos, and Malt Spirits, let us take a View of the chemical Principles which each contain, and wherewith they abound; for all Spirits being obtained by Distillation, it is impossible the Fire should make so great a Difference as is generally
M believed.

believed. Wine distilled yields much Spirit, which is only its Oil and Salts subtilized. Proceed you Distilling, after this Spirit you have much Phlegm; after that come over acid Spirits mixed with a sharp, white, nauseous, astringent Phlegm; continue the Distillation on, and there rises a black, thick, burnt, stinking Oil, which may be separated from the acid Spirits by brown Paper; after all, in the Bottom of the Still remains a Mass of Salt and Earth, which may be separated with Water. This Salt is a true, fixed, vegetable, alkaline Salt. Distill Ale or Beer, an inflammable Spirit rises first, then after it a white, sharp, astringent, nauseous tasted Phlegm, mixed with an acid Spirit; encrease the Fire more, and you raise a burnt, thick, black, stinking Oil, which may also be separated from the acid Spirits by brown Paper, the acid Spirit is only the acid Salt dissolved in the Phlegm. After all you have in the bottom of the Vessel a Mass like to black Pitch, which is only Earth and a fixed vegetable alkaline Salt. Molossos fermented with Water, and cast into a Still, yield the same. Grapes contain much Oil, Salt, and a great deal of Phlegm.

Phlegm. Barley has very much Oil, and but a little essential Salt. Sugar has in it much essential Salt, and not a little Oil. As all these Spirits are in daily Use with us, I shall consider their Use and Effects promiscuously. For as the better sort use only what is called Brandy, so the poorer must be content with Malt-Spirits, which are cheaper, and whose Faults are, 1. Want of Age, which gives it an intolerable empyreumatic and fiery Taste, tho' some pretend to take it off by putting into it dulcified Spirit of Nitre. 2. It is of a lower Standard than true *French* Brandy, for this has about seven Parts of Phlegm to nine of Spirits; that has nine Parts Phlegm to less than five of Spirits, and very often much less; for I caused twenty Quarts of it to be cast into a Still, and we only got two Quarts of Spirit, which would all burn away; *i. e.* nine Parts Phlegm to one of Spirit. 3. It wants that delicious vinous Flavour of true Brandy; this some attempt to give by putting dulcified Spirit of Nitre, or young Buds of black Currant Berries into it, but the remarkable Taste of the first, and the abomi-

nable calified Flavour of the second, discover the Cheat.

Good Brandy is clear (its yellowish, brownish, or other Colours, if not fictitious, are borrowed from the Cask, wherein it has stood long ; others tincture it with Molossos, Saffron, or other Ingredients, but the Deceit is detected by its fiery Taste) not too hot, nor sharp, of a pleasant vinous Smell, of a strong Body, good Age, and easily fired. The best way to discover Brandy from Spirits, is, not to taste it, but to pour a little of it into the Hollow of the Hand, and rub it between the Hands, then smell it ; and if it have a fragrant vinous Smell at first, and retain it a considerable time, it is good ; but if it strike the olfactory Nerves at first with a strong, hot, pungent Smell, then with a sourish Smell, like Water that has stood upon Meal till it sour ; and lastly, if that Smell be succeeded by a faint one, it is plain you are imposed upon with common Spirits. To try the Standard or Strength of Brandy or Spirits, pour out into a Wine Glass, better than a third Part of the Glass full ; take it up in one Hand, and cover the Glass well with the other Hand, then shake it.

it till the Bubbles rise, and so set it down ; if the Bubbles continue a-top several Minutes after it is set down, it is of a right Body ; but if they instantly fall, and the Liquor look whitish, it is too low and weak. This is a surer Way than looking whether it leaves Streaks like Oil hanging on the Glass. Burying Casks of Brandy in the Earth, or putting it to lie on the Sea some Months, takes off its hot empyreumatic Taste, makes it mild in the Mouth, and warm upon the Stomach ; it is by the last of those Stratagems, that the *Dutch* impose upon us with Molossos Spirits instead of right *French* Brandy ; tho' if we reflect upon the Principles of both, I cannot see any Harm in the Cheat.

Brandy should be drank very moderately, rather from Necessity than Pleasure ; so will it be of Service to us, and contribute to our Health. When the Stomach is raw, weak, and lax, a moderate Dram raises a pleasant Warmth, a gentle Tension, and better Digestion, by rarefying the viscid Phlegm which loaded it, invigorating its Fibres, and making its Coats play with more Agility and Force. When Flatulency or Wind

abounds in the Intestines, a Dram rarefies the retained gross perspirable Matter, and prepares it for an Explosion upwards or downwards, or sends it off by Perspiration; it revives the languid nervous Filaments, affords them new Spirit and Strength for Action, whereby their peristaltick Motion is promoted. If Cholicks proceeding from the same Cause, grieve the Person, and gripe the Bowels, by distending their membranous Coats, or Acrimony of the perspirable Matter pricking their Nerves, a Dram relieves him after the same manner. When the Body is faint and languid, from a Waste or Dissipation of the Animal Spirits, from too much Exercise, too long Watching, Fasting, or too low and abstemious a Diet, whereby the nervous Juice is exhausted, and the Solids cannot play nor act with their former Vigour, a Dram is so subtile and fine in all its Parts before it is drunk, that in its very swallowing, and as soon as it enters the Stomach, it penetrates and soaks into the Nerves as soon as it touches them, adds to the Elasticity and Force of the Fibres, invigorates their Vibrations, and takes off all Sense of Languor or Faintness. For
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the same Reasons, when the Circulation of the Blood is languid from the decreased Tone of the Vessels, a Dram excites their Vigour, and causes a brisker Circulation. After a recent Cold, when the Body is depressed, and the natural Evacuation of Perspiration obstructed, whereby the Constitution is loaded, but the Strength diminished, a Dram invigorates the Vibrations of the Solids, accelerates the Motion of the Fluids, promotes their Attenuation, prepares them for Secretions, and passing off by the Skin and Kidneys, especially if the Dram be mixed with warm Gruel and a little Honey, it causes a profuse Sweat, and relieves the small Vessels and excretory Ducts of that fizy Matter which loaded them, and straiten'd or shut up their Passages. A Dram given in a Decoction of Mallows and Althæa Root, with a little Honey, cleanses the Kidneys, Ureters, and Bladder powerfully, forces away Sand, small Stones, gravelly and slimy Matter with the Urine. A moderate Dram used in dropical and cachectic Cases, where the Body is disposed to be over-bulky, and in danger of Leucophlegmatia, or any other general

or particular Tumours, from a Laxness, Weakness, or Languor of the nervous System, or a Thickness and Toughness of the Blood, especially of the lymphatic Juices, insuperable by the wearied, resty, and weak Fibres. In these Cases a Dram refreshes and invigorates the Fibres, rarifies the Fluids (tho' a too frequent or excessive Use of Spirits has the quite contrary Effect) stimulates the Vessels and secretory Contractions, causes the Blood to flow to the Reins in larger Quantity, and with greater Velocity; hence the Secretion of Urine is increased, and at the same time Perspiration encouraged. Lethargic and paralytic People find an Advantage from a moderate Dram, for its Spirits being subtil and volatile, break and discuss the gross Humours which loaded and laid by the Nerves from Action; it invigorates the Solids, and rarefies the Fluids. A Dram speedily revives the languid Spirits of the weary Traveller; but herein it comes short of the Cold Bath, and even of washing the Feet and Legs in tepid Water, or cold Water in Summer. Let a thirsty Person that's very warm, first take a Dram before he drink Water, Small Beer, or Milk, so will he

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he prevent the Inconveniencies or fatal Effects which swelling down cold spiritless Liquors produce in such a Case, as an Asthma, Stuffing of the Lungs, Obstructions, Inflammations, Impostumations of the Bowels, &c. It is useful in a cold Morning before a Man sets out on a Journey, for it raises a pleasant Circulation and Warmth in the Body. When the Stomach is jaded and weaken'd by a Surfeit of tenacious Food the preceeding Day, which have left much Phlegm in the excretory Ducts of its Glands, or exhausted its Spirits, a Dram is good before Dinner. A good Dram given to a Soldier when he is entering the Field of Battle, encreases the Motion of his Blood and Spirits, raises Strength and Courage, makes him regardless of Danger, and scorn Fear and Cowardice; but this Alacrity is only a speedy Flash, quickly succeeded by a greater Flatness and Low-spiritedness. Drams are chiefly useful to flegmatic Constitutions, bulky Bodies, or old Age, and such as have weak and lax Stamina, exposing them to Diseases of the Head, and nervous Disorders or Dropsies, &c. They are best in cold
Weather,

Weather, foggy Air, wet Seasons, or after too solid or tenacious Foods.

But all these good Effects will not counterballance the Mischiefs done by the indiscreet and immoderate Use of Spirits. All melancholy Tempers are injured by them; for tho' a small Dram rarefies the Blood at first, yet the more thin and spirituous Parts exhale sooner, and carry off some of the finest Serum with them, whereby the Blood becomes thicker, and the Solids more dry and stiff. Cholerick Dispositions have their Fibres too much stimulated by its Use, the Acrimony of the Blood and its Motion, and Agitation, are increased by it. The repeated Use of unnecessary Drams in sanguine Constitutions, rarefies the Blood at first, makes it distend the Vessels, and some unprepared Parts rush into the Canals of coenic Tubes, where they cannot readily pass; hence Fevers and other Disorders. A too free Use of them in any Constitution, puts the Humours into a violent Agitation, whereby their nutritious Parts are unfit to answer their Design, for this great Rarefaction is often succeeded by a Thinness and Watriness of the Blood; hence an ill Habit
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of Body, a pale Look, and Decay of the natural Actions. When the Blood is become watery, its earthy Particles attract one another, and form a viscous Slime, which furs up the Insides of the Vessels, and still diminishes the Action of the Solids more, till they be loaded with a fizy Mucus; then come on Cachexies, Catarrhs, Dropsies, Palfies, Lethargies, Scurvies, &c. A clear Air, hot Climate, and Summer Season, require least of their Assistance, yet in Summer a Dram is useful when the Weather is exceeding hot, and the Springs of the Fibres so fallen back, that the Body still sweats, Childhood and Youthhood forbid their Use any further than as a Medicine in some particular Cases; but an Excess of the depressing Passions, require a moderate Dram in any Stage of Life, except Infancy or Youthhood. All Diseases, from too great a Constriction of the Vessels, or Contraction of the Fibres, and all Disorders from too great a Plethora or Rarefaction of the Blood. Distempers from a too great Acrimony of the Juices, all Inflammations, Impostumations, or Schirrosities of the Bowels, absolutely forbid their Use; Asthmas, tickling dry

dry Coughs, cretaceous Knots in the Lungs, Palpitations of the Heart, Concretions of fleshy Substances in the Vessels, ardent Fevers, &c. are rendered much worse by the least Indulgence of Drams. All Spirits cause Drunkenness by an Overfusion of the Fluids, and Distention of their containing Vessels; hence Headachs and Pains from saline *Spicula* darting into and pricking the relaxed Vessels, and the slimy Matter deposited on their Insides, which weakens them and soaks them with Phlegm, till the Person becomes paralytic, lethargic, apoplectic, convulsed, stupid, &c. and often Spirits kill the Drinker upon the Spot; from all which we cannot help thinking, that the World had been happier, had Men never been accustomed to Brandy or Spirits; for such as content themselves with Water, or clear fine Table Beer, are more vigorous, healthy, and long-lived than Drammers, who mostly make themselves diseased, and at last become more like Beasts than Men.

C H A P. II.

Of R U M.

RUM is another spirituous Liquor, often used in Punch ; it is made in the *West-Indies* of Sugar Canes, and is of a stronger Body than Brandy ; *i. e.* it contains a larger Quantity of Oil, and less Phlegm and Salt : Its Oil is less attenuated and subtilized, whereby its volatile Salts are more embarrassed and sheathed up. Neither is its Oil reduced to such minute and subtile Particles, either because the Canes were less fermented with the Water, or because the Oil and Salt of this Cane are more viscid and gross, than those of the Molossos drawn from the Sugar, which has undergone the sundry necessary Operations, and has been thoroughly fermented afterwards. For altho' all thoroughly fermented Liquors afford much more Spirit, in Proportion to their Body and Kind, than the less fermented ; yet it is certain, that the sundry Operations Sugar undergoes in the making, may, and does break, attenuate, separate, and divide the Principles in the Molossos (though the grossest

grosseſt of the Sugar) more than theſe ſame Principles exiſting in the crude Cane, where the firm Union of the groſs Oil and Salt makes the unprepared Sugar of almoſt a loathſome luſcious Taſte. And alſo all Liquors, thoroughly fermented, have, during the Fermentation, a free Acceſs and Communication with the external Air; whereby the inteſtine Motion is promoted, and the ſmalleſt and moſt ſeparable Parts are too much attenuated and reduced to a ſubtile Aura, which exhales to the depauperating of the Liquor of much of its fineſt Parts; hence it yields leſs (tho' a ſubtiler) Spirit.

That Rum which is of a browniſh, transparent Colour, of a ſmooth, oily, grateful Taſte, of a ſtrong Body and Conſiſtence, of a good Age, and well kept, is the beſt. That of a clear, limpid Colour, an hot pungent Taſte, is either too new, or daſhed with Spirits.

To ſuch Palates and Stomachs as can bear it, Rum is certainly preferable to Brandy, either for a Dram or Punch, in many Caſes. Brandy (*e. gr.*) is a Diuretic, becauſe it ſtimulates the Veſſels, and rarefies the Blood, whereby only its finer and more ſerous

ferous Parts are strained off by the Kidneys; but Rum not only stimulates by its Salts, but lubricates by its more and grosser Oil, and thereby expands and dilates the renal lateral Vessels; whereby not only the thinner, but also the grosser and more excrementitious Parts of the Blood, are allowed a ready Passage thro' the renal Strainers, and get off by the Ureters. Again, where the Vessels are sluggish, and the Blood fizy, Brandy promotes Perspiration in a gouty Habit, and forces off Part of the Salts by Urine, as it, at the same time, carries much essential vegetable Salt into the Blood; but Rum softens and dilates the Vessels more; hence a freer Perspiration both of Salts and Serosities, as well as a Discharge by Urine; and at the same time it conveys less Salt into the Blood, and its more and grossy Oil sheaths the remaining Acrimony of the Blood, which answers two valuable Intentions, 1. It thereby dilates the corrugated capillary Vessels, wherein the gouty Matter was stopped and lodged, and the Relaxation of the Vessels gives Nature an Opportunity to pour in thinner Fluids upon these gritty Lodgments and sharp Matter, whereby they
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are diluted, dissolved, thrust forward, and expelled by the excretory Ducts of the Skin.

2. It blunts the Edges of the pointed pricking Salts, and obtunds the reigning Acrimony, makes it less uneasy to the Patient, till the elastic Vessels can attenuate, separate, and dissolve it, so as to be either perspired or thrown back into the Blood, till it arrive at and be strained off by the Kidneys.

In nephritic Pains and gravelly Cases, where the Vessels are always much contracted, and sometimes inflamed, the Use of Rum is preferable to that of Brandy, because it relaxes the Contraction more, increases the Stream of Urine, and makes way for the obstructed Matter to pass off, or be forced and washed out of the Channels. Bilious Constitutions can bear the use of Rum diluted with Water better than Brandy, because their Solids being elastic and contracted, and their Vessels narrow, and Fluids acrimonious; for whatever blunts the Acrimony of their Juices, and softens and dilates their Fibres and Vessels more, must be beneficial. On the contrary, whatever adds to the Stimulation and Contraction of their Solids, and the Sharpness and Saltness of their Fluids, must

must unavoidably be hurtful. All such as have more elastic Fibres, contracted Vessels, sharp and thin Juices, lean and slender Bodies, if they will be meddling with Drams (which, if they prefer Health and long Life to Taste and Luxury, they should use but as Medicines, *i. e.* from Necessity, not Choice or Pleasure) should prefer Rum.

Hard Drinkers who have broken their Constitutions by frequent Debauches, will have a moderate Dram, that will not only raise, but preserve the Tone of the Stomach, maintain and strengthen good Digestion, and keep them from being too much damped; here Rum should take place of Brandy, not only because it fills and invigorates the nervous Tubes with less volatile and more durable Spirits; but at the same time its Oil blunts the Points of the Salts, which other Liquors have left too plentiful in the Blood.

In chronical Asthma's, Coughs, and Stuf-
fing of the Lungs, if any moderate Dram
may be allowed, Rum is the best, because
its Spirits are less volatile, its Oil more and
grosser, to smooth the stiff and contracted
Vessels, expand their Sides, make way for
Spitting, and by its solid Particles clearing

the Tubes of some Parts of their infarting Load.

In cholerick Disorders, from acrimony, pricking, paining, and tearing the nervous Threads, Rum offers fairer for Relief than Brandy, because it is more oily, smooth, and softening. It is also more suitable to old Age, because, at the same time it stimulates, it also lubricates and dilates the Vessels, whereby they keep longer open and passable, the Straiting shutting up, and Coalescence of which, is the only Cause of old Age and natural Death.

In recent great Colds, without a Fever, Rum is more serviceable than Brandy, provokes both Perspiration and Urine more powerfully, as it swealts the Salts, makes their Stimulus less sensible, and contracts the Vessels less; nay, its Sulphur smooths and dilates them more.

When the Person is very hot and thirsty, a Dram of Rum is much better to drink than Brandy, before Water, Small Beer, or Milk; for this keeps the Vessels more pliable, dilated, and lax, maintains a freer Course for the Fluids to pass without Lett or Stoppage. For the Mischiefs done by Water, or such small Liquors, in this Case,

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is being drunk cold, they suddenly contract the Vessels so as the Liquids cannot pass, their finest and thinnest Parts are discharged through the Interstices, or forced along the Tubes, whilst the more gross are obstructed, fixed, and wedged in; hence Obstructions, Stagnations, Inflammations, Ulcerations, or Mortifications, or Schirrus's, and carcinomatous Tumours of some *Viscera* of the Lower Belly.

But for these Reasons phlegmatic and corpulent People must still allow Brandy the Preference, because it stimulates more, and raises a greater Contraction; for it abounds more with Salts, and its Oil is more subtile, exists in smaller Particles in the Liquor, and their Vessels and Fibres are so soaked in insipid Humidities, and relaxed with Oil, that they want no Lubrication, nor the Salts in their Blood any Absorbent. Cachectic, hydropic, lethargic, and paralytic Persons, must also chuse Brandy on the same Account; and so must those who have sur'd-up Vessels and foul Glands (which raise scrophulous Knots, œdematous Swellings, whether fixed or shifting) for the Spirits of Brandy being more fine and subtile, they rarefy the Blood, and stimulate

the Vessels more. In excessive hot Weather, when the Fibres are much relaxed, and Perspiration or Sweat profuse, Brandy must have the Precedency, because it stimulates and contracts more, and rarefies the thick and sizzly Matter better, raises a brisker Motion in all the Juices; tho' it must be owned, that these its good Effects are but of short Standing.

In a moist, foggy, or marshy Air, where the Moisture hangs upon the Skin, and straitens or stops the Mouths of its excretory Ducts, and diminishes Perspiration; or where the Spring of the Air is weakened or broke, so that it neither expands itself sufficiently in our Lungs, Food, nor Blood, but renders the Juices both ways sizzly, a Dram of Brandy is better than Rum.

But in an infected Air Rum is before Brandy, because it leaves more Oil in the Mouth and Throat, which entangles and imbibes the infectious *Effluvia* or *Miasmata*, floating about and hanging in the Atmosphere, and sucked in together with the Air; and in this Case, the greatest Preservative is to spit out all out Spittle, whilst we are in that infected Air; but especially when we are in the Houses, or about the
Beds,

Beds of the Sick ; but in this Case Sack exceeds both.

But because Rum is more balsamic, and less volatile, an Excess of it is overcome with more Difficulty, because it is of harder Digestion in the Body, and loads the Vessels more, and so the abundance of its Oil may prevent the Pungency of the Salts ; yet all Oils, when the watery Part of the Blood is much drained off, become rancid, dispose the Blood to Coagulations and Stagnations, the Effects whereof are chronic, and often dangerous Disorders. It is true, Spirits of the Grape do also coagulate the Blood ; but that is upon another Account, *viz.* Thirst ; the speedy and great Rarefaction of our Juices, whereby they get into too small Vessels, where they are driven forward, till the Motion of the more earthy and saline Parts are first retarded, and then stopped, have their watery and more serous Parts squeezed forwards by the *Conatus* of the Sides of the Vessels to come together. Thus the more fluid Parts are expelled and grosser retained ; hence the Blood becomes thick and fizy. 2. All Spirits of Wine coagulate the Blood from the vast Quantity of Salts they contain ; which Salts being of a most

attractive Nature, they not only attract themselves, but also the earthy Parts of the Blood, render it thick, black, and grumous; the thinner Parts being separated and expressed. But it does not herefrom follow, that because Spirits thicken the Blood, they are therefore proper in a too thin and dissolved State of this Fluid; for the Salts stimulate the Vessels too much, heat the Body to an intense Degree, cause an Hectic and Waste, by encreasing the Force and Resistance of the Solids, and their Triumph over, and the Attenuation of the Fluids; and not only do the Salts stimulate, but abrade and wear the Infides of the Vessels, so that both Solids and Fluids are damaged, and bring the Body into languishing Atrophy, and Death concludes the tragical Scene.

It is on the same Account that a liberal Indulgence of White-Wine brings on a *Chlorosis*, Paleness of Countenance, Leanness of Body, and Death; and this is chiefly the Fate of those who accustom themselves to Morning Whets, which are the Ruin of many brave Constitutions.

C H A P. III.

Of A R R A C K.

R A C K, or Arrack, is brought to us from the Eastern World, as Rum is from the Western ; it is the Product of Rice, which abounds very much with Oil, and grows chiefly on very fat Earth in hot Countries, where the Sun's great Heat, and the great Plenty of Sulphur in the Earth, causes a very plentiful Ascension of that Principle into the Ears of the Grain.

Rack exceeds Rum much more than that did Brandy ; it is more softening, balsamic, restorative, and amicable to Nature ; used either in Drams or Punch, it makes much less Waste and Wear of the small Vessels : Its chief Principle, next to Phlegm, is a fine subtile Oil, of such minute Parts, that it readily incorporates with Water ; therefore it is better in all Cases, where repeated Debauches have worn and abraded the internal Surfaces of the Vessels by much saline, or other solid Particles, sent into, and kept in too large a Proportion in the Blood ; or where our Juices are too sharp, acrimonious, and pungent. Wherefore Rack

should be chiefly preferred by gouty Persons, and others that cannot comply with a sober, temperate, and rational Life, for Reasons already insisted upon in what we have said above concerning the Nature of Rum. It is more adviseable in a clear Air, to aged Persons, bilious Constitutions, or when the Fibres are too strong and elastick, or the Fluids too thin, agitated, dissolved, wasted, or saline; or where sharp, tickling, dry Coughs attend, or the trachæal Ducts are too dry and rough, or the Blood too sharp and corroding, causing frequent Hæmorrhages of the Blood (but here, truly, no Man that prefers Life to Taste, Custom, and Company, should indulge the Use of any Spirits) and Loosnesses. Thin, lean Habits can bear this better than any other Spirits. A moderate Dram of it, is a great Friend to *Venus*, because it is not only subtil, and a little stimulating, but soft, smooth, and balsamick, and helps to fill these Vessels with a suitable Liqueur. It exceeds in all those Cases where Rum is recommended, and has much the Preference of it. For Satisfaction herein, I shall refer you to what I have said above concerning Rum, which, for Brevity's sake, I shall not now repeat.

But

But Rack is still worse in those Circumstances where Brandy is preferable to Rum, because it has less Salts and more Oil, is harder of Digestion, sooner turns rancid, causes more and greater Obstructions, is injurious therefore to phlegmatic Constitutions, to Persons of lax Solids, and sily or thick Fluids.

The oftner I reflect on the Mischief done by distilled Spirits, the more I am confirmed that the human Race had been happier had Drams never been known, and cannot help cordially joining with Dr. *Allen* (*Synopsis Medicin. Art. 1633, 1634.*) *That the plentiful devouring of those Spirits, has killed so many thousands of Men as there are Stars in the Sky; nay, ten times ten hundreds of thousands have died by these, more than all the rest of Poisons whatever. This Poison not only occasions violent Distempers in a great many, but also sometimes sudden Death in some; wherefore if vinous Spirits deserve not the Name of a Poison, he neither can learn nor conjecture what else they should be called, for taken inwardly they are detrimental almost to all Animals. And that these Effects of Spirits are not Fancy or Opinion, Mr. Hales has proved from Experiment,*
(*Hæma*

(*Hæma Statics*, p. 128, 129.) That Brandy contracts the Coats of the Blood Vessels, and thickens the Blood and Humours, both which Effects contribute to the sudden Heating of the Blood, by much encreasing thereby its Friction in the contracted capillary Vessels; which sudden Heat is also further encreased by the mere Mixture of Brandy with the Blood, which glowing Heat soon ceases. Hence it is the unhappy habitual Drinkers of Brandy, and other distilled spirituous Liquors, do so insatiably, from time to time, thirst to drink of that deadly Liquor, which, by often heating the Blood, and contracting the Blood Vessels, does by Degrees reduce them to such a cold, relaxed, and languid State, as most impetuously drives them to seek their Relief in that Liquor, which they too well know, both by their own Experience, as well as by the daily Destruction of thousands, to be so very baneful and deadly, as to become by the great Abuse of them, the most epidemical and destructive Plague that ever beset Mankind. Whatever Service a seasonable moderate Dram may be of, when taken as a Medicine, yet this, beyond all peradventure, is and will be the Result of an habitual Use, or Abuse of those Spirits, whilst

whilst human Fabricks consist of the Materials they now do. And if these are the Effects of Brandy on animal Bodies, what can we say for unnecessary customary Tippling of Punch, which is only now two Parts Water to one of Brandy, with Lemon or Orange Juice added, both which are also Contracters of the Vessels, and Thickners of the Blood, like other Acids. I have often wondered that seeming Bravery, which could swallow down liquid Fire, as Mountebanks and Jugglers do lighted Tow or Flax, should yet be so cowardly as to boggle at the Use of mineral Spirits more than vegetable, and so have *Aqua Fortis*, or *Aqua Regia*, become a common Tiptle, the unnecessary Use of both terminate in the same thing, Death, Death; and the known Effects of both, make the imprudent Drinker *Felo de se*: Tho' both acid and alkaline Spirits, Pills and Bolus's are good Medicines, yet what wise or honest Man would make a Bowl of Punch of the first, or a Dish of Meat of the last, for Use.

Of those Spirits is Punch made, into the Nature of which we shall briefly enquire.

C H A P. IV.
Of P U N C H.

THE Use of Sugar in Punch, is to give it a more agreeable Taste, to sheath the Acids of the Lemon, and prevent Gripes, Flatulency, Pricking and Pain in the Bowels. The Sugar for this Use should be well refined, very white, hard, and sparkling when broken, like small Crystals, and of a pleasant Smell, somewhat like that of a Violet.

Lemons are an Acid, and quench Thirst by stimulating the sluggish Glands and secretory Ducts. Their Juice puts a Stop to the Blood's Rarefaction, and thickens it when over thin, stops its too rapid Motion, and therefore is very serviceable in ardent Fevers, and all Poisons which act by distending and relaxing the Vessels, and over-rarefying the Fluids, such as Poppies, Opium, Henbane, *Coculus Indiæ*, &c. Lemons strengthen the Stomach by giving a fresh Tone to its palled Fibres, and thereby en-vigorating it ; they provoke Urine by giving the renal Strainers a pleasing Stimulancy, and obtunding the *Alkali* and Salts of the Blood,

Blood, and causing the Fibres to shake off their slimy adhesive *Mucus*. They are very serviceable in Headachs, and all Pains which proceed from a rarefied and thin Blood, stretching and paining the Vessels. They restore the Crasis of the decayed Blood very successfully. Their Acidity makes their Use very successful in an Overflowing of the Bile, or where there is a Predominancy of bilious Humours in the Body, because they draw up the relaxed Strainers of the Liver, and give a too fluid Blood a better Consistence.

They are no less serviceable in a *Diabetes*; for altho' they be diuretic, yet they thicken the Blood like other Acids, contract the renal Glands, and check the Force or Power of the *Alkali* in the Blood. They are excellently adapted to very hot and dry Weather and Climates, and to bilious Constitutions, and such as are disposed to Chachexies and Dropsies. They are no less useful to such as have weak and relaxed Fibres and Vessels. They give an agreeable acid Taste to several Sauces and Meats. They are most efficacious in Vomitings, especially of green, yellow, rusty Matter. Their outward Rind, or Peel, heats the Body as the
Juice

Juice cools it. It is an excellent Stomachic, Antiscorbutic, and comes in good Play against Agues, and all Diseases from a Viscidity of the Blood, because it abounds with a fine subtile Oil and volatile Salt, which give the Blood a greater *Momentum*, break its Cohesions and Attractions, encrease its Motion and Agitation in the Vessels, promote Perspiration, lessen the Quantity of Humours, and relieve the oppressed Vessels of a Part of their Load.

But wherever the Blood is too thick, Lemon Juice is hurtful, because Acids thicken it more, and make the Vessels stiffer and stronger. Where an acid Salt prevails in the Blood, Lemons are prejudicial; for they add to the Acidity, because their Juice abounds in acid Salt and Phlegm, but has little Oil. Their Juice, used to Excess, cools too much, condenses the perspirable Matter, fills the Bowels with Wind. Hence Indigestion, Flatulency, Vapours, sour Belching, Gripes, and chronical Pains; but Sugar added to the Juice, prevents its bad Effects, and makes it more friendly to the Stomach, as the first sheaths up the Acidity of the last, and hinders its pricking or paining the Coats and Nerves of the Bowels. They
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are hurtful to phlegmatic Constitutions, old Age, and to the Inhabitants of cold and moist Countries, because they cool and thicken the Juices of the Body too much. The best Lemons for Punch are those that come from hot Countries, large, soft, of an aromatic and pungent Smell and Taste. The least Speck of a pricked Lemon will spoil a whole Bowl of Punch. Lemons in Punch make it more diuretick, help to prevent Drunkenness, and the over-heating of the Body with Sugar and Spirits; they hinder the Blood's Rarefaction and excessive Thirst.

Seville Oranges have less acid Salt in them than Lemons, and this Salt is entangled in a more ropy viscous Phlegm than that of Lemons; therefore a larger Quantity of Lemon Juice is necessary, as it is less acid. Both of them contain but little Oil, and the Nature and Properties of their Juices are so much the same, that we need not insist any further upon either.

What we have already advanced on the Properties of the fundry Ingredients of Punch, will facilitate our Labour here, and comprehend what we have to say upon it in a very few Words. Punch therefore of a
right

right Strength (which should at least be four Parts Water to one of Brandy, and in Summer eight or nine Parts Water to one of Brandy or Rum, except to gouty or aged Persons, who require it stronger) and moderately drank, is an admirable Liquor (provided it be made of *French* Brandy, or of good old Molossos Spirits, which if rightly made, kept, of a strong Body, and purified some Months with Sea Air, are every whit as good) and an excellent Diuretic; it powerfully cleanses Kidneys, Ureters, and Bladder from small Stones, Sand, and fabulous Matter, from the Thinness of the Liquor, subtile Oil, and volatile Salts of the Spirits, Oil and fixed Salt of the Sugar, and austere Salts of the Lemon; which wash off, separate, and dissolve these Cohesions in the urinary Passages: The Acidity of the Lemon gives a *Stimulus* to the Vessels, and at the same time the Salts encrease the *Momentum* of the Blood.

Not only are these viscid and sly Combinations of the Blood broken and dissolved, and the Juices attenuated and thinned in the urinary Passages and Strainers, but all over the Body; therefore will these volatile Salts clear and cleanse the secretory and excretory

Ducts

Ducts of the Skin, and promote a free Perspiration, which makes Punch very serviceable in recent Colds.

Weak Punch checks a febrile Heat, and prevents the too great Fluidity or Rarefaction of the Blood; in the first Case, it restores the due Consistency of the whole Mass, and makes it fitter to pass the respective Strainers of the Body, as it dilutes the Juices, gently stimulates the Vessels, thins, grinds down, and forces forward the obstructed Matter thrown into the capillary Ducts, during the Blood's Rarefaction; for all Heat in the animal Body, arises from an increased Action of the Solids against the Fluids, and of the Fluids resisting the Solids, and both mutually acting upon, and resisting one another, grinding down, and destroying the globular Part of the Blood, so as it is enabled to enter the Orifices of smaller Vessels, than its respective containing Tubes; and as it advances forward in these Capillaries, its Motion becomes slower, and the Action of the Vessels upon it greater, and the Propulsion of the Blood behind stronger; all which encrease the Body's Heat, the Blood's Attrition and Waste, and indicate the Use of a Liquor that may thin, cool, and check the Blood's Motion and Fury, and the Driness

and Parchedness of the exhausted and weakened Vessels. And such a Liquor is this weak Punch, made pretty acid. This answers the second Intention, which was the Prevention of the Blood's too great Fluidity, or its Arrival at such a State as I just now mentioned.

If Punch be drunk very acid, it checks the Overflowing of the Gall, and the Redundancy of *Alkali* and Acrimony, and oily Sharpness, and therefore should be proper in a Jaundice; but that the Vessels of the Liver are hereby stimulated and contracted, and the Contraction of the hepatic Vessels is the Cause of the Distemper; and therefore whatever corrugates them more, must exasperate and not remedy the Disease, except made with Sugar and Lemon, which are a Soap.

It is a great Friend to a palled and relaxed Stomach; it thins and carries off its Slime and *Mucus*, sweetly stimulates and restores the decayed Tone of its Fibres; it cures stinking, bitter, and nidrous Belchings and Vomitings, which always proceed either from an alkaline or oily Acrimony. It helps Indigestion and want of Appetite, by stimulating and supplying, with nervous Spirits,
the

the relaxed muscular Coats of the Stomach. It is an Antidote against bilious Cholicks, Gripes, and blackish, frothy, fætid Stools, which proceed from too much Bile. It invigorates the Fibres and Solids, as well as dilutes the Fluids, whereby Secretions and Evacuations are carried on more regularly ; it scours and excites the sluggish, furred up, and resty Tubes of the Glands, and therefore is of singular Use in Cachexies, Dropsies, Leucophlegmacies, scorbutic, leprous, and scrophulous Habits ; all which are owing either to a viscid, or alkalious State of the Fluids, and some of them to a weak and relaxed State of the Solids ; from which also spring lethargic, paralytic, and comatous Indispositions ; and therefore weak and acid Punch will make a proper Drink. It is a notable Cooler in hot Weather, and a Preservative in an infectious Air ; and because it raises the Solids, dilutes the Fluids (if not too acid) forces forward obstructing Matter in the small Vessels of the extreme Parts, and promotes Perspiration ; it is therefore good in the Gout.

It is the best Liquor in the World to them who have palled and weak Stomachs, Indigestion, and want of Appetite, from frequent

Debauches with Malt Liquors, luscious thick Wines, Idleness, and want of Exercise, which have foul'd the Glands, and indisposed the Body. The Universe cannot afford a better Liquor for phlegmatic Constitutions, and bulky Bodies. Students, who have lost Appetite and Digestion, or contracted a cachectic Habit of Body, may expect much Relief from this, and Exercise in a clear Air. Whenever the Blood abounds with too much Sulphur, Mucus, or alkalious Salts, this is an incomparable Draught for ordinary. But in these Cases its Use must be laid aside when it hath answered its End, lest it occasion Illnesses of a contrary Nature.

But altho' it oblige us with all these, and several other good Services, in a high Degree, yet it is injurious to choleric Tempers, and thin, lean Habits; for it wears their Vessels, sends off the nutritive Parts of their Blood by Urine, encreases the Elasticity of their Fibres, promotes their Perspiration, and adds to their Evacuation. It likewise encreases the Rigour and Stiffness of old Peoples Vessels and Solids, and sends off precipitantly the finest of their Fluids by Urine. It is highly injurious to them who have
large

large and unpassable Stones lying dormant in their Kidneys ; for it augments the Current of the Water, enlarges the Cavity of the *Pelvis*, moves the Stone out of its Repository, raises most excruciating Pains and Death. It is destructive to hectic Persons, because it wears and wastes their Solids too fast, and exhausts their remaining Fluids by immoderate Perspiration and Urine. It is no less hurtful to them who have Ulcers in their urinary Passages, as it commands a more impetuous Flux of Humour into these Parts ; and the Salts of the Urine inflame and irritate them more. For the same Reason its Use cannot be advised, nor safe, in ulcerated Lungs, tickling Coughs, &c. where Abortion is threatened ; whatever irritates and stimulates these Parts, must create a Miscarriage. In a Dysury or Scalding and Heat of Urine from its Acrimony, Punch adds to its Acidity, and increases the Heat and Inflammation, therefore its Use must not be allowed. Those whose Stomachs have a very thin mucous Coat, cannot drink it without a Pain at their Stomachs.

In arthritic Pains, Punch aggravates the Symptoms, both as it adds to the Sharpness,

and encourages Inflammations. To the more laborious and drudging Part of Mankind, it is just nothing at all; for it sends off the nutritious Juices which should repair their Waste, and wears their Fibres and Vessels.

As I have given Rum and Arrack a separate Article, it is needless here to be tedious in discoursing on their Punch. It is enough, to add briefly, that as these Liquors are of a stronger Body, and more oily and balsamick Nature than Brandy; so they are better (if not made too acid with Lemon) for gouty, aged, and bilious People; for Arrack, containing much fine small Oil, it lubricates and dilates the Passages and Vessels, makes way for the Matter of gouty and arthritick Pains to pass off through the Vessels. The Water, Sugar, Rum, or Arrack, do all join to lessen or take off the perpetual Stimulus of bilious Persons Fibres, to sheath the Acrimony of their Blood and Juices, to keep the Vessels more extended, and so preserve the elastick Solids from triumphing over the too much attenuated and dissolved Fluids. Rum, or Arrack Punch, makes a noble Diuretic, cleanses the Glands, excretory Ducts, and Pelvis of the Kidneys,

from

from all Congestions of gravelly Matter. This Punch, if little or no Acid be added to it, is a much better and safer Drink in tickling Coughs, Stuffings of the Lungs, Asthmas, and other Disorders of the Breast; because the Oil of the Arrack softens and dilates the pulmonary Vessels, lines their Inside with a fine oily Mucus, removes their Stimulus and Irritation, makes Spitting easier; the Salts of the Sugar, at the same time, deterge, break, separate, and cleanse away the viscid, inactive, or gritty Matter which stuffed the Vessels. It agrees better with such as have a thin mucous Lining on their Stomach, excites Pain less; (but indeed this is chiefly the Fault of the Lemon or Acid in any Punch.) If drunk in a moderate Quantity, it intoxicates less, and raises not so much Pain in the Head, because it has fewer Salts to fix into and prick the delicate Vessels of the Brain. In a word, its Use is more safe in any too elastic or rigid State of the Fibres and Vessels, as it stimulates less, raises not such a rapid Circulation, Attenuation, and Attrition of the Juices.

But Brandy Punch must have the Preference in febrile Heats, quenching Thirst,

cooling and refreshing; therefore this is more adapted for Summer Service, and the other to Winter Use. This must also be preferred in all Constitutions which have an alkaline or oily Acrimony predominant in them, because it has more Salts and less Oil, as in hot, sharp, oily, bitterish Vomitings, slight Inflammations, Tendency to Gangrenes or Mortifications; black, livid or pale Erosions, loss of Appetite, loathing of Food; loose, most fetid, shining, dark, or blackish Stools; very brown, sharp, fetid, thick, froathy Urine, half putrified when made, and deposits little Sediment and Sweat of the like Nature, in a thin, dissolved, florid, scarce, coagulating Blood; in Decolorations, and Blisters rising on the Skin, in frequent Eruptions of purple or livid Spots and Buboes; in a stinking, cadaverous fetid Breath; in a bitter, stinking, oily, or salt Taste of the Mouth; in a rancid, fat, sharp Taste of the Mouth like burnt Oil; in nidrous hot Belchings, smelling like rotten Eggs or Sulphur; in fat, white, fetid Stools, feeling exceeding hot in the Passage; in Scurffs, Dandriff, Leprosy, or large, hot, ichorous Eruptions on the Skin; in all lethargic, paralytic, apoplectic, and

and comatose Dispositions ; in all hydropic, scrophulous, cachectic Habits ; in all Viscidity and Siziness of the Juices, Foulness, Loading, Dilatation, or Stuffing of the Glands with slimy Matter ; and in a too great Weakness, Laxness, and Imbecility of the Fibres, Solids, or Vessels, Brandy Punch exceeds that of Arrack or Rum, because it is more saline, stimulating, and deterging, &c. but where there are manifest Signs of an Acidity in the Blood, Arrack comes in better Play.

Milesii Nissenii de Ebrietate Epigramma.

*Ebrietas commune Malum, suavissima Pestis,
 Hæc mea per Titulos Fama feretur, ait :
 Illa ego Terrarum Domitrix, Regina Malorum,
 Quæ clarum toto Nomén in orbe gero.
 Dux Scelerum suprema vocor, Vitiisque Magistra,
 Nil nisi dulce Malum, nil nisi dulce Nejas.
 Mors Animi, gratusque Furor, blandumque. Venenum,
 Morborum placidus Fons, et amica Lues.
 Gurgulio, Fundi Barathrum, Censûsque Vorago,
 Ultio sum præsens, ipsaque Pœna mihi.
 Syrtis, Hydrops, Syren, Scylla, insatiata Charybdis,
 Grandior & Furiis omnibus esse feror.
 Nam quæ gestarum mihi surgat Gloria Rerum,
 Notum est eois occiduisque Plagis.
 Nullus erat sævis unquam Bellator in Armis
 Qui dederit gelidæ millia plura Neci.
 Nemo tot impune Cædes, tot Funera Nemo
 Edidit, ac nostræ sæpe dedere Manus.*

At

*At mihi quæ Generis Series ab Origine pergat,
 Aut quæ sint Partis Pignora chara mei,
 Quæ Mala, quantaque Damna feram Mortalibus
 ægris
 Quo sim victa Modo, quo reprimenda Metu.*

C H A P. V.
 Of C Y D E R.

THIS Liquor owes its Invention to a Norman, who much admired the delicate Flavour of Apples ; and long Observation assures us, that such as chiefly drink Cyder, are more healthy and strong, and have a better Complection than such as are accustomed to Wine or Ale. Both my Lord Bacon and Dr. Baynard tell us of several Persons near an hundred, and some above, who, having seldom used any other Liquor, were very active and vigorous at that Age. It is certainly more nourishing than Wine, for not being so thoroughly fermented, its Spirits are less subtile and impetuous ; and being more intangled in a viscous Phlegm, and more diluted with Water, they exhale not so speedily. And because it is less spirituous than Wine, it is therefore more cooling and moistening, and less intoxicating ; but for the same Reason, when

when it is drunk to Excess, its Effects last longer; for its viscous Parts prevent the sudden Dissipation of its Spirits; besides, the Viscidities are also dispersed in the Vessels of the Brain, and so fill up its small Tubes, as to obstruct the brisk Motion of the nervous Juice, and lessen its Influx. The viscous Parts being the lightest, they will always lie next the Sides of the Channels, while the more fluid Parts keep the Axis, and therefore the like Quantity of this Liquor will not invigorate so much, or so speedily as Wine. But then after a drunken Bout of Cyder, the small Vessels require a longer Time to re-assume their Elasticity, to attenuate and shake off the adhering Viscidities from their Insides; and because the more viscous Parts of the Liquor are nearest the Sides of the Vessels, the watery Parts next them, and the more subtile Parts keep the Axis; therefore Persons drunk with Cyder, are more stupid, sleepy, pale, and cold, than those that are intoxicated with more spirituous Liquors, such as Wine, Brandy, Punch, &c. These being more spirituous, *i. e.* having a greater Quantity of attenuated essential Oil and Salt in them, give a greater Stimulus to the Vessels, raise a brisker Pulse,

and

and make Persons more cheerful and merry, frantick or mad; but Cyder abounding more with a viscus Phlegm than Wine, will therefore nourish more, and its Nutrition be of longer Continuance, though not equal to pale Ale.

The Properties and Effects of Cyder differ according to the Difference of the Fruit it is made of, its Preparation, Keeping, Age, and Body. The greatest Part is made of harsh, wild, common Apples, such as grow plentifully in the Fields of *Herefordshire*, *Worcestershire*, and *Gloucestershire*; some is made of fine Table Fruit, as Golden, *Kentish*, and *Kerton* Pipins, Pearmaines, &c. and some of a Mixture of these Fruits. That is the best Cyder which has most Plenty of essential Salt and Oil, and these well attenuated, dissolved, and rarefied by Fermentation, till they be reduced to such subtile Parts as afford a Spirit like that of Wine or Ale. What is made of wild, harsh Apples, will keep longer than the sweet Cyder which is made of Table Fruit, because it has much more essential Salt, which is its tartarous Part, and gives it its rough Taste. This Plenty of Tartar breaks and dissolves the Sulphur into very small Particles, and
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reduces it to a subtile Spirit, which abounds in this Liquor, and is retained by the fine Salts, so that this Cyder neither dies, corrupts, nor turns rancid so soon as the other. For the like Reason it requires to be longer kept before it come to Perfection, that is, before it deposite its Tartar and *Fæces*, and reassume its Spirit from the Mother. But sweet Cyder having more and grosser Oil, and less essential Salt, the last is not sufficient to excite a compleat Fermentation, *i. e.* to attenuate and dissolve the Oil by strong repeated Occursions and Collisions; nor does their Action upon one another break and strip them of their Viscidities which sheath them; for which Reason this Cyder gives no Pungency to the Taste, nor Irritation to the Stomach, it dies soon, or becomes rancid and sour; the subtile Salts and Sulphur, or Spirits, are not in full Proportion intermixed with the Liquor, to prevent the active Attraction of the different Principles; but either the few subtile Spirits are united again with the Salts, and so the Liquor turns sour, or they exhale and leave it vapid and dead. Very watery and insipid Apples yield a tasteless Cyder, which soon become flat and thick, because the Salt and
Oil

Oil of the Fruit bear no Proportion to its Phlegm ; hence its Fermentation is languid, its Viscidities not broken, its Spirits quickly exhale, and its Tartar is so inconsiderable as not to preserve the Liquor. Cyder that has Water mixed with the Apple-Juice, is liable to the same Fate, for the Water over-dilutes the essential Salt and Oil of the Fruit.

Strong sweet Cyder is of the Nature of luscious, half-fermented Wine, such as the *Portugal* and *Spanish*, which being more spirituous, and having a greater Strength, they load the Stomach and disorder the Head more, and afford less good nervous Juice than this Liquor, being only half fermented, and of difficult Digestion, so as sweet Cyder has a greater Proportion of Oil than Salts, its Oil is grosser, not attenuated and subtilized to a Spirit ; it is therefore admirably fitted for very thin, lean Habits, because its Viscidity gives a Check to the violent Action and Attrition of the Muscles, and adds to the Opposition of the Blood against its Vessels, is not so easily digested, nor so quickly perspired. These Viscidities sheath the sharp naked Salts of the Blood, which corrode and tear the small Vessels, and prevent the Stiffness and Rigidity of the Fibres, by sup-
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pling them with their softening Oil. It is an excellent Drink in an Atrophy from an immoderate Waste of the Fluids by Perspiration, as it diminishes this Evacuation, and softens and relaxes the stiffened Fibres with its Oil. And in too great a Fluidity of the Body, from an excessive muscular Force, its Viscidities abate the violent Action of the Solids, and help the Blood to a better Consistence. Where the Blood abounds with too much Salt, whose Particles have attracted and formed bulky Corpuscles, the Phlegm of this Cyder dilutes the Salts, and its Viscosity sheaths them when they are broken and divided into lesser Particles. It is admirably well adapted for melancholy Constitutions, since its Phlegm thins the Blood, and its Oil softens the Fibres. It is a very good Drink for hard Labourers, or such as use much Exercise, because it supple and relaxes their Fibres and Vessels, affords some Recruit of Spirits, and goes but slowly off, and is therefore a proper Draught in clear dry Weather, when Perspiration is full and free.

To choleric Constitutions this Liquor is hurtful, because its Oil soon turns rancid in the Body, and occasions an oily Acrimony.

Its Use is also unadvisable in very hot Weather, when the Solids are too much relaxed, the Blood too much rarefied, and the more fluid Parts are immoderately expended: So in foggy Weather, when the Spring of the Air is weakened or broke, and the Air in the Blood is short of its natural Elasticity, the liberal Use of this Liquor is in danger to load the Body with crude, viscid, and indigested Juices, which threaten Fevers, Coughs, Colds, or Swellings of the Glands. Old People should forbear it, because their Perspiration being low, it must occasion Viscidities in their Blood, not easily to be got rid of; and as it has a Tendency to render the Secretions slower, and the secreted Juices more fizy, such as are subject to moist Asthma's, Catarrhs and Coughs, with Expectoration of much viscid Phlegm, should be aware of it. The Sedentary and Studious should refrain it, seeing it affords not Spirits sufficient for invigorating and employing both the Organs of the intellectual Faculties, and voluntary Motion; and chiefly, because their Fibres become resty and weak through want of Use, and their Blood therefore fizy. Such as are much subject to Fear, Sorrow, Grief, or any of the

the depressing Passions, would do well to forbear its Use, because these Passions subtract from the Vigour and Tone of the Fibres, and add to the Force of the Fluids till they become viscid, which Viscidity is still more encreased by this sweet Cyder. It is very improper for phlegmatic Constitutions, which are liable to a Foulness and Swelling of the Glands, or a Stagnation of the lymphatic Juices, for it increases both the Laxness of the Solids, and an undue Mixture and Viscidity of the Fluids. Such as have weak cold Stomachs, and bad Digestion, or much Flatulency and Crudity in the Bowels, or are afflicted with flatulent Cholic, or frequent Stools of white and frothy Excrements, should carefully avoid it; for all half-fermented Liquors, or such as have more Oil than Salt, whose Oil is gross, and the Salt not attenuated, but wrapt up in its viscous Coats, are highly injurious to such Persons, as they increase the Flatulency, and very much relax, weaken, and cool the languid Stomach and Intestines. For the same Reason, such as have Worms or other Insects, or their Ova lying in the Body, should avoid sweet Cyder. Neither should those who have Palsies, Convul-

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sions, Lethargy, Numbness, Night-mare or Cramps, make this their Beverage, since it both relaxes the nervous System more, increases the Viscidity of the Blood, and Penny of Spirits. Nor is it proper for them that are goutish, or have arthritic Pains, (except from Acrimony of the Blood) because its Viscidities added to those of the Blood, must exasperate the Distemper. All intermittent Fevers and Agues forbid the Use of this Liquor ; but the Apples of which it is made, such as *Kentish* and *Golden-Pippins*, are an excellent Pectoral, ease tickling Coughs from a Sharpness of the Blood, and relieve Asthma's from Acrimony of the Juices, or Constriction of the Lungs ; they are exceeding good in Consumptions, a fine Cordial, open the Body gently, and cool pleasantly, and are of great Service in hot, and dry, scorbutic, or splenetic Habits.

Rough Cyder is made of wild, harsh, or bitter Field Apples ; these contain a deal of essential Salts, which break and attenuate the oily Parts in the Fermentation, by their intestine Motion and Collisions ; they grind down one another into smaller Particles, rub off their viscid Coats, and separate the Cohesions of the viscous Part of the Liquor,

so that the whole is more intimately mixed. This Cyder is therefore of a strong, pungent, stiptic vinous Taste, will keep longer, and is of more general Use and Benefit than the other; when fine, well purified, of a good Colour, and not lowered with Water, it is better for Health than Wine, if moderately drunk. It is certainly preferable to the strong, heavy, luscious *Portugal* and *Spanish* Wines, which are but half fermented, and approaches near the Nature of *French* Claret. Nay, *Lemery* himself owns it to be more healthful, because its Spirits are not impetuous, nor so much agitated as those of Wine; besides, they are detained and moderated by a great Quantity of viscous Pilegm, which still contributes to make this Liquor moistening and cooling. The great Plenty of Tartar contained in this Cyder, renders it an excellent Stomachic; it dilutes and washes off the Slime, which adheres, like Glue, to the inner Coats, contracts and strengthens the pall'd and relax'd Fibres of the Stomach, and gives a brisker Appetite and better Digestion; it is therefore a proper Liquor to be used against Belching, Stuffing at the Stomach, Nausea, or Vomittings, and for inappetent Women that are

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breeding.

breeding. It is of admirable Service in all Loofenesses, Fluxes of the Belly, and immoderate Evacuations by Stool, because it cleanses and strengthens the Bowels, draws up their muscular Fibres, and contracts their relaxed weeping Glands; its Plenty of Tartar breaks and separates that Mucus which fills up or straitens the Mouths of the lacteal Vessels, and causes a Lientery, or discharge by Stool of the Chyle like Milk, together with the *Fæces*. It not only scours off the Slime from the Insides of the Lacteals, which occasions a Toughness of the Chyle, but gently stimulates and invigorates these Vessels, and increases their Action and Force, so as to attenuate and prepare the Chyle much better before it be poured into and mixed with the Blood. Being pungent and tart, it both scours and contracts the dilated Glands of the Throat and Trachea, and is therefore useful in Rheums and Catarrhs. It is a proper Drink for such as are troubled with White Swellings; and where the Breast is stuffed with thick Phlegm, and the Vessels inactive or weak, it serves well to pump it up. Its Spirits being intangled by a viscous Phlegm, and its Tartar plentiful and solid, it cleanses the Kidneys, Ureters, and Bladder, of Sand, small Stones, Slime, and all gravelly Matter,

ter, which are only the Product of relaxed Kidneys, which strain off, or let pass thro' their excretory Ducts too large a Quantity of Salt and Earth, but wanting Strength and Motion to shake off, and send it to the Bladder, they give it a peaceable Lodging in the Pelvis, till the Earth and Salts attract, and are cemented with a Viscus or Slime, which is the first Embryo of a Stone. As it strengthens the whole solid System, invigorates the Fibres, which give a brisker Motion to the Fluids, whereby they are attenuated and mixed, made to pass the sundry Secretions, and fitted for Evacuations, it is certainly a noble Prevention of the Gout, and all arthritic Pains which arise from a Thickness and Unfitness of the Humours for Motion, or a Sluggishness, Weakness, and Laxness of the Vessels. In intermitting Fevers, Agues, and other pe-riodic or erratic Diseases, which spring from a Siziness of the Juices, and an Inactivity or Indisposition of the Vessels and Fibres for Motion and Action, this Cyder is a most agreeable Liquor ; for it both thins the Blood, attenuates the slimy Juice in the Capillaries, and stimulates their Channels. In Rheums and Distillations on the Eyes, involuntary Tears, Dimness of Sight, from

the Thickness of the nervous Juice, or Weakness of the Nerves, it is very proper Drink for common Use ; as also in Lethargies, Palsies, Apoplexies, Convulsions, and Coma's, it is highly serviceable ; and in hysterick Disorders, this, or *French Wine*, challenge the Preference of all other Liquors. In Corpulency, Cachexy, Leucophlegmatia, and Dropsies, it is of signal Service, if moderately used for ordinary Drink, because it thins the Blood, excites the Fibres and Vessels to Motion, accelerates Circulation, promotes Digestion, Secretion, and Evacuation, especially Perspiration ; and as it frees the contorted Glands and weak Vessels of their obstructing Slime, it also stimulates and contracts the dilated, lax, and inactive Vesicles. And for these Reasons, phlegmatic Constitutions, studious, inactive, and valetudinary Persons, cannot have a better Vehicle. Sanguine Temperaments will find it very serviceable, if moderately drank ; and the Melancholy will reap much Benefit from it, because it gently stimulates, dilutes much, and does not quickly exhale or send off its Spirits. As for those who are much afflicted with the depressing Passions, they can have nothing better substituted in the
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room of *Champaign* or *Burgundy*. Thus far of the Virtues of fine rough Cyder, well made and long kept.

But as there is no Liquor which has not its bad Effects in some Cases and Constitutions, or is not sometimes prejudicial, so this is hurtful, if drank too new; it causes Flatulency in the lower Belly, from the Rarefaction and Attenuation of that gross Air which was shut up in the Viscidity of the Liquor; hence cholic Pains, Gripes, and Costiveness; and from the abundance of its Viscidity, it fouls the Glands, begets Obstruction in the smaller Vessels, from whence several Diseases take their Birth. These Viscosities cleave to the Coats of the Stomach and Guts, lie between them and the Food, weaken Digestion, pall these *Viscera*, occasion an imperfect Chylification, and leave many gross, cold, and phlegmatic Humours there, or send up some with the Blood to the Brain, and so beget nervous Disorders, or a Stupidity; if sent to the Liver, Obstructions and Jaundice ensue; if lodged in the Lymphaticks, Leucoplegmias and Dropsies follow; if they fall and settle on the Lungs, Stuffings, Hoarseness and Shortness of Breath first, then a tearing

Cough, and a difficult Expectoration of a Viscid comes on. And when this Cyder arrives at its Maturity, it is by no means a nourishing Liquor for the mechanic and hard Labourer, because it consists of sharp tartarous Parts, which, together with the Action of the Muscles, attenuate and expel the finer and more nutritious Parts of the Blood too speedily. For the same Reason it should be refrained in a Strangury, and its Use forbidden when the elevating Passions have fixed their Symptoms on us, such as Tremblings, too great Perspiration and Evacuation by Urine; then it increases the Contraction of the Nerves; but if lower'd with Water, its an admirable Liquor in this Case, because weak Nerves soon fall back and languish after the Fit of Passion is over; and any viscid Draught is apt to pall them, and generate Obstructions in the weak Tubes; but the Tartar and stiptic Taste of the Liquor, gives them a Pungency, and preserves their Tone and Vigour. Very thin and meagre Habits should not indulge the free and frequent Use of it, because its solid Parts abrade the Vessels, contract their Fibres more, and so keep or make them leaner still. Such as are in an Atrophy should abstain

abſtain from it; and ſuch as live low, uſe much Abſtinance, faſting or mean Diet, becauſe it very powerfully promotes Digef- tion, Secretion, and Evacuation. Neither is it adviſeable in tickling Coughs, from a Saltneſs of the Humours, or Thinneſs and Acrimony of the Blood. In a word, as its Uſe is highly ſerviceable in too great a Weakneſs, or Relaxation of the Fibres and Veſſels, and too much Viſciditiy, Thickneſs, or undue Mixture of the Fluids, ſo its continued Uſe is hurtful where the Fibres and Veſſels are too much contracted, ſtiff, and ſtrong, becauſe it increaſes their Elatiſcity; or where the Blood is too much attenuated, and Perſpiration immoderate.

Befides theſe we have treated of, there is another Sort of Cyder, which is ſour, not through Age, hot Weather, or Accident, but from the Tartneſs of the Apples it is drawn from. This has a very ſenſible Acidity in it; and as all Acids cool much, ſtimulate ſtrongly, and increaſe the Contraction of the Fibres and Veſſels, therefore this Liquor is good for ſuch as are troubled with an Overflowing, of the Gall; of Service in Gripes, Loofeneſſes, frothy, black, and fetid Stools, occaſioned from much Bile;
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and in all Cases where an alkaline Acrimony is predominant in the Blood. It quenches Thirst, is a great Thinner of gross slimy Humours, and therefore very proper for corpulent phlegmatic Habits, to clean their Vessels, scour their Glands, prevent or remove Obstructions, glandular Swellings, and lymphatic Distentions. In hot, choleric Constitutions, (if not very thin and lean) it cools and refreshes much, and is a palatable Drink. It stops bilious Vomitings, cures stinking Belchings and Indigestion, by strengthening the Stomach, bracing its Fibres, washing down its palling Slime, and contracting the dilated Strainers of the Liver. It is proper in intermitting Fevers and Agues, arising from the Grossness and Viscidity of the Blood, the Inactivity, Weakness, and Laxness of the Solids; the last is hereby briskly stimulated and excited to Motion, the first attenuated, its sundry Cohesions broken, and the whole Mass made more fit for Motion and Nutrition. In Inflammations and inflammatory Fevers, it is a proper Liquor if mixed with a little Water. In an Itch, Scurvy, or Leprosy, arising either from an alkaline or oily Acrimony of the Blood, there cannot be a better

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Liquor drank, for it powerfully checks both these, and very much cools the whole Mass. In arthritic and rheumatic Pains, from too great Thinness and Sharpness of the Blood and Juices, it is of singular Service; and to such as are liable to Hæmorrhages, its Use is adviseable, because it puts a Check to the Blood, which occasions its increased Velocity and impetuous Force against the Vessels, stimulates and contracts the small sanguiferous Tubes, and checks or prevents the too great Rarefaction of the Air in the Blood. But the exceeding Harshness of this Liquor makes it injurious to very thin Bodies, and unadviseable in all Acidities of the Blood, which are discoverable from a sour Taste in the Mouth, sour Belchings, gnawing Pain in the Stomach, &c. for it increases that Sharpness. In all great Constrictions of the Solids, it stimulates and adds to the Contraction or Crisping of the Fibres. In an Atrophy, it promotes and increases the Waste; and to hard Labourers, and such as use much Exercise, or feed on low mean Diet, it is a hurtful Liquor.

There is yet another sort of Cyder that is insipid, or has only a watery Taste, which is owing to the Prevalence of Water in the Fruit,

Fruit, far beyond the other Principles, either from the too luxurious State of the Plant, or from its being planted too deep in the Earth, its standing shaded from the Heat of the Sun, or from a cold wet Season. In all these Cases the Fruit is crude and watery, and never comes to that Perfection, which a due Proportion of essential Salt and Oil would bring it to. This is the worst of all Cyder, highly pernicious to the Phlegmatic, Aged, Studious, and Valetudinary, for it abounds with Viscidities, which render the Blood fizy, and dispose the Body for many Obstructions, Swellings, Dropsies, Cachexies, Scrophula's, &c. It is only fit for quenching the Thirst of hard Labourers, Mechanicks, and such as use much Exercise, and these must use it sparingly, or expect to smart for it.

A Jack of Brandy mixed with a Bottle of Cyder, when its decanted, is frequent in several Places, but Brandy is a needless Addition to rough Cyder; sweet Cyder is much bettered by it, and insipid Cyder highly requires it, before we can drink any Quantity of it with Safety; for above one half of the best Brandy being an inflammable Spirit (which will all burn away) that's only essential

fential Salt and Oil ; this subtile, volatile Salt, added to that of Cyder, helps to destroy its Viscidity, and makes the Separation of its Cohesions and Digestion in the Body much easier, prevents that Flatulency, Belchings, Gripes, and cholical Pains, Sleepiness and Dulness, Pain at the Stomach, and Indigestion, which Cyder alone produces sometimes ; it is no less useful to hinder Obstructions in the Vessels and Glands, Sicknesses of the Blood, Relaxation of the small Vessels, Corpulency, and other Disorders which sweet and insipid Cyder are apt to cause ; it is an admirable good Liquor for old Men, and will agree with most Ages, Constitutions, Climates, and Sex ; but Brandy makes it less nourishing and strengthening to Mechanicks, because it hastens the Dissipation of its finest Parts ; insipid Cyder, with a little Brandy, becomes a very wholesome Liquor. The Weak, Valetudinary, Studious, Idle, Corpulent, or Cachectic, should refrain Cyder, produced in a very wet and cold Summer, unless they mix Brandy with it, and then it will be serviceable and wholesome for them.

Pears contain much Earth, Oil, and essential Salt, besides their Phlegm, whereby they

they strengthen the Stomach, create an Appetite, and are astringent; of them a Liquor is made call'd Perry, which I shall here consider: It is much of the same Nature of Cyder; it differs also in respect of its Taste, Age, and Making; it differs in Taste, according to the Fruit of which it was made, whether that was sweet, sour, harsh, insipid, or of mixed Tastes. 2. According to the Degree, Perfection, or Imperfection of its Fermentation; by these you may find out its Properties in the same manner as those of Cyder, which I discussed at large. Perry must not be drank before it be fine, because its viscid Parts have not subsided, therefore it weakens the Stomach, palls the Appetite, causes Flatulency, Gripes, and cholical Pains; the Spirits also, which should promote Digestion, invigorate the Vessels, and actuate the Liquor, are entangled and wrapt up in a gross Phlegm or Viscosity; but when the Liquor has stood a due Time upon its *Fæces*, the gross, earthy Particles attract one another, and form larger Corpuscles than the Body of the Liquor in a State of Rest can support, or carry up any longer, but they fall to the Bottom and Sides of the Cask, where partly by the stronger

stronger Attraction of these gross earthy Cohesions, partly from the Subtily of the Spirits themselves, and their Disposition to Motion, they are extricated from the *Fæces*, set at liberty, and go into the Liquor again. Then is the proper Time either to drink it, or draw it off into Bottles ; for if it stands much longer, the Spirits are either absorb'd by the Cask, or exhale and leave the Perry vapid and dead, after which it soon becomes ropy and mothery ; or if the Spirits be again united to the Salts, it is spiritless, and turns sour and undrinkable ; of all Perry, that which had Water mixed with it when it was made, spoils the soonest, and fines the least. Perry, because of its Tartness when fine, strengthens the Stomach and Bowels much, and is therefore a good Astringent or Binder ; it washes off the Slime and *Mucus* from the Inside of the Intestines, opens the Passage to the Mouths of the Lacteals, clears them from all *Mucus*, or slimy Furring, invigorates their constituting Membranes and Fibres, scours the contorted Tubes of the Glands, unloads them of their adhesive and oppressing Viscidities, by stimulating, invigorating, and exciting the delicate Vessels to cast it off. 2. By the

Solidity

Solidity and Driness of its earthy or saline Parts, which add a fresh *Momentum* to the Blood, and incide, break, separate, and divide its viscid Combinations. 3. By carrying into the Blood a Sufficiency of Phlegm or Water to dilute it, and facilitate the Action of both Vessels and saline Particles. Perry is the best Liquor can be drunk after a Surfeit of Mushrooms, especially if a Dram of Brandy be added to it, then it is reckoned a better Antidote than either Wine or Honey, both which contain a very fine Oil, subtilized to a Spirit, which entangles the acid, volatile, coagulating, and malignant Salts of the Mushrooms, and the delicate essential Salts of the Liquor, penetrate, separate, attenuate, and divide its tenacious spongy Parts; which two, *viz.* the acid and coagulating Salts, and the spongy tough Substances, passing together with the Chyle into the Blood, and getting into the small Vessels of the Lungs, stuff and distend them with both a tough, coagulated, and malignant Blood, which occasion Suffocation, Strangulation, and Death; hence those Mushrooms which have the least Salt and most Oil, are the least dangerous, for the last fetters up and entangles the first, so as it is not so volatile, separable, and mischie-

vous as it would otherwise prove ; *è contra*, the more Salt and less Oil, the more dangerous ; therefore such as degenerate from their natural Colour after they are washed, and become blue or black, are the most fatal, because they contain the most acid coagulating Salt. It is from the Redundancy of this Salt in them, that if they be let lye some Days after they are gathered, before they be dressed and pickled, they undergo a kind of Fermentation, wherein their Salts which were bound up in their viscous and spongy Parts, slowly and insensibly extricate and free themselves, shake off their Fetters, take to them their full Forces, and become a Poison ; but whilst the Salts were closely tied to the Oil and Sponge, were less dangerous ; therefore Mushrooms brought up on Dung Beds, having much Sulphur in them, are more safe than others. It is for these Reasons that *Dioscorides* divides them into two Classes, one whereof he ranks among the Number of Poisons ; and *Pliny* is highly displeased with the Luxury of Mankind, who will gratify their Palate in the eating of them at the Peril of their Lives. *Nero* called them the Food of the Gods, because his Predecessor *Claudius*, who died with eat-

ing of them, was deified. And *Lemery* says they are a sort of Victuals we cannot be too cautious of, seeing the best of them are sometimes pernicious, and every Day whole Families are brought to their End by eating of them. Perry is made after the same Manner, and has near the same Properties as Cyder; the best is that made of tart or harsh Pears; it has a Colour and Taste like *Rhenish* Wine, and has much the same Virtues as rough Cyder; but Perry is the more pleasant, and revives and refreshes more, is very diuretic, cools much, and is therefore very injurious to such as labour under flatulent Cholicks, Obstructions of the Liver, Pancreas or Mesentery of a schirrous Nature. Either Cyder or Perry have their Virtues highly exalted, their Viscidities much broken, and rendered much better for Use, if Sugar, Nutmeg, and Ginger be put up with them; these prevent their Crudity and Flatulency.

I have discoursed at more length upon Cyder, because, next to Malt Liquors, it is the chief Product of our Isle, and a Drink that is most used in several Western Countries in *England*, and often called for in hot Weather over all *Britain*.

C H A P. VI.

Of T O B A C C O.

N E V E R did Nature produce a Plant that in a short Time became so universally used; for it was but a short while known in *Europe*; till it was taken almost every where, either chewed, smoaked, or snuffed; a Pipe of Tobacco is now the general and most frequent Companion of Mug, Bottle, or Punch-bowl. Sir, or Mr. *John Nicot*, one of the *Most Christian King's* Council, was sent Ambassador, by his Master, to the Court of *Portugal* in 1559, where he continued till 1561. Some time after his Arrival, he went to see the Edifices, publick Buildings and Monuments; the Keeper of the last presented Sir *John* with a Plant just brought from *Florida*, which the *Europeans* knew nothing of; he planted it in his Garden, where it flourished and encreased mightily, but its Virtues or Uses were still a Secret; till one Day a Cousin of one of Sir *John's* Pages, who had an obstinate, painful, and

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spreading

spreading tetterous Eruption upon his Cheek, had stamp'd some of the green Leaves, and applied Juice and all to the Ulcer ; a few Applications gave a wonderful Turn to the Disease. The Page gave Sir *John* an Account of it, he presently sent to the King's first Physician, to mark the Operation and Effects of the Herb upon the Sore ; the King of *Portugal* sent him fresh Orders for the same. The first time the Doctor looked upon the Sore, it had overspread the Cheek, seized the Nose, and corroded one of the Carthilages of its *Alæ* ; in twelve Days it cured this obstinate and rebellious Ulcer. A little after Sir *John's* Cook had almost chopp'd off one of his Thumbs with a great Kitchen Knife ; he applied the juicy Leaves of this green Herb, and the Wound was perfectly cured in ten Days after ; then it became of great Repute in *Lisbon*. Its Fame brought the former Page's Father, who had a large Ulcer on his Leg of two Years standing, and no Means he could find would cure it ; he came to *Lisbon* to the Ambassador's House, and begged some of his new Plant, which he got, and in thirteen Days his Ulcer was cured and well.

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This made it still more famous, and brought People from all Parts of the Kingdom, to get of the Ambassador's Herb (for so it is called to this Day, *Nicotiana*, from *John Nicot*; and *Petun*, from *Petun*, the Name the *Americans* give it, to extend or spread; and *Tabaccum*, from *Tabago*, an *American* Island, which produces it in Plenty and Perfection) and among others was a Woman which had a Tetter or Ring-worm, covering her whole Face like a Mask, and very thick. Sir *John* caused her to stay and have the fresh Juice and green Herb applied several times a day to her Face; in ten Days she was shewed to the Ambassador perfectly cured. Then a Captain, who had come to Sir *John*'s on his Way to *France*, with his Son that was sadly over-run with the King's Evil, and going there for the royal Touch, he used this Juice and Herb to his Sores for some time, and was thoroughly cured. Then Sir *John* sent some Seeds of it into *France*, to King *Francis II.* the Queen-Mother, and Lord *Jarnac* Governor of *Roche*, and several others of the *French* Lords. *Jarnac* made a farther Experiment, for he distilled the green Leaves

with Eyebright, and gave the Water to one whose Lungs had been stuffed, and he asthmatick for some Time, and it cured him. From *France* Tobacco soon reached *England*, and was as much esteemed. Upon a chemical Analysis, it yields a large Quantity of acid Phlegm, Oil, and Earth, and a moderate Quantity of urinous Spirit and volatile Salt; its great Effects seem to arise from Sal-Armoniac, embarrassed with much gross Sulphur. The first Author who wrote of this Plant, was *Charles Stephanus*, in 1564. This was a mean, short, inaccurate Draught, till Dr. *John Seibault* wrote a whole Discourse of it next Year, and put it into his second Book of Husbandry, which was every Year reprinted with Additions and Alterations, for twenty Years after. He had a large Correspondence, a good Intelligence, wrote the best of the Age, and gathered the greatest Stock of Experience about this new Plant. In the Year 1587, *Evartus* wrote a small Treatise at *Antwerp*, called *De Pana Reu*, another new Name given to Tobacco Anno 1573. *Monardus* wrote upon it only from the small Accounts he had of it from the *Brasilians*; since which Time

many others have wrote of it, as *Magnenus*, *Neander*, *Thurius*, *Scrivenerius*, *Dubartus*, *Dr. Fagon*. But Sir *Walter Raleigh's* Mariners, under Mr. *Ralph Lane*, his Agent in *Virginia*, first brought this Commodity into *England*, Anno 1584; and that famous Proprietor of this Plantation, foresaw good Reasons to introduce the use of it, however King *James* might afterwards, through his own personal Distaste both of it and him, write his *Counterblast* against it; a Work surely consistent with the Pen of no Prince, but one of his Politicks, seeing this Leaf brings a Revenue to the publick Treasury of no less (many times) than 600000 *l.* a Year. Sir *Walter* likewise was the first that brought the Custom of smoaking it into *Britain*, upon his Return from *America*; for he saw the Natives of *Florida*, *Brasil*, and other Places of the *Indies*, smoak it thus, they hung about their Necks little Pipes or Horns, made of the Leaves of the 'Date Tree, or of Reads or Rushes; and at the Ends of them they put several dry Tobacco Leaves twisted and broken, and set the End of them on fire, and sucked in as much of the Smoak as they could; this

they affirmed satiated their Hunger, quenched their Thirst, revived their Spirits, recovered their Strength, made them more light and clear, banished their Droopings and melancholy Clouds, and relieved their Stomach from much Phlegm.

Smoaking of Tobacco is certainly very serviceable in the following Cases : It is highly beneficial to flegmatic, corpulent, and overgrown Habits, for its Fumes tickling the Nerves of the Mouth very agreeably, and giving a gentle Stimulation, it accelerates their slow Circulation, and furthers the Blood's Motion, which is the chief Thing wanting in gross, flegmatic, slow Bodies. By this gentle and smart Titulation of the Nerves of the Mouth, it affects their Origin and common Sensory, whereby the whole nervous System is somewhat invigorated and drawn up, all the Solids of the Body are somewhat contracted, and some of its volatile Salts being sucked into the Lungs, together with the Breath, their Nerves are stimulated and rouzed up ; the Heat of the Smoak, and the warm Mouth at the same time, take off the chill Cold of the Air before it enters the Lungs ;
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hence smoaking on the Road in a very cold Day, keeps the Body warm, and helps to prevent catching Cold. It is yet of more sensible Use to Men of publick Business, who are obliged to keep much Company, and are frequently tippling; for not only do its Salts in the Smoak, irritating the Glands of the Mouth, cause a more plentiful Secretion of Saliva, which consists of some of the most viscous and tenacious Parts of the Blood, and so ease the delicate Tubes of some Part of the fizy Load, to the Relief of the whole Body; but this Salt striking the Nerves of both Mouth, Lungs, and Stomach, with a smart Pungency; and these Nerves communicating with many others, give them a small Stimulus, which renders the Blood's Motion somewhat brisker (but not rapid) so as Secretion and Excretions of several sorts are performed in a less given time, than they would be without some little Provocation: And also the little acid Phlegm, and much gross Sulphur contained in the Tobacco, and drawn into the Mouth with the Smoak, help to entangle and embarrass some Part of the alkaline or oily Sharpness of the Liquor, or our Juices,

so

so as they are not at that liberty to vex us and produce their Effects. And because it provokes a plentiful Discharge of Saliva, the salival Ducts are dilated, their Diameters lengthened ; hence the Drinker that smoaks is less liable to Thirst after, than he that drinks much and smoaks not ; because Smoaking both warms and pleasantly irritates the Nerves, whereby they put forth a better Tension, and exert a brisker Force ; therefore the Smoker is less liable to Drowsiness, Dullness, or lethargic Disorders after Drinking, than he that smoaks not, seeing the Secretion made by the salival Glands, is of a viscous or ropy Nature ; the cleansing of them by extracting so much Phlegm, and enlarging the Diameters of their excretory Ducts with smoaking, will free the Smoker more from the Defluxion and Load of this thick, tough Serum on those small Tubes (which are straiter in such as use not Smoaking, or have not inured the Body to an habitual Drain that way) than others ; hence the last are more subject to Rheums and Catarrhs after tipping of thick, gross, viscous Liquors. And because much of the Tobacco's Salts are washed down partly with
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the Liquor drank during smoaking, and partly with the Spittle separated about the Head of the *Pharynx* and *Larynx*; these will give a brisk Stimulation to the Coats of the Stomach, and help it to throw those viscid palling Dregs of the Liquor, or that plentiful glandular Juice spued out, into the Cavity of the Stomach, causing what the Vulgar call *Water Foam*. I say, those Salts contribute to the Stomach's Expulsion of that languid palling Load, and throwing it into the Intestines, to be thrown off by more natural and less hurtful Outlets. All fermented spirituous Liquors, containing much Sharpness in them, they often stir up that excruciating Pain called the *Tooth-ach*, in those especially that are more liable to, and troubled with it; but smoaking Tobacco gives frequently most signal Relief here, both because its Acidity blunts and entangles the Sharpness of the Spirits, and as it is of an anodyne or stupifying Nature; and lastly, as it opens the Sluices of the salival Ducts, and makes a more plentiful Discharge of the Saliva, and leaves less of it to stagnate, or regurgitate upon the delicate Springs of the Nerves, inserted into the Roots of the
Teeth,

Teeth. Such as are more liable to a Constipation after drinking, reap Advantage by smoaking Tobacco; for the Salts washed down by the Drink, irritate the Bowels, and make them answer sooner and better. Such as drinking make stupid, dull, spiritless, and half dead, should therefore smoak with it, that the Pungency of the Tobacco may stir up and provoke their dull Nerves, and keep them in play. Such as are more vexed with rheumatic, or erratic Pains, by moderate drinking, should smoak Tobacco, for its Acid or Sulphur embarrasses those acrid Particles, whose Points are so ready to pierce into, and fix in the small Vessels of the Periosteum, and excite intolerable Pains. They that are subject to flatulent Cholicks, by drinking much viscid or ropy fermented Liquors, will reap some little Advantage by smoaking Tobacco with their Pot; for the Salts of the Tobacco drawn into the Mouth, and swallowed with the Liquor, both attenuate the Flatulences, and promote the peristaltic Motion of the Guts, whereby they drive forward their contained Matter, and give not time to its Parts to stagnate, and its Viscidities to attract and distend

distend the Bowels, and raise Pain. Such as have a tickling Cough, find it ordinarily encreased after drinking; it will be some little Advantage to them to smoak, seeing the Acid and Sulphur of the Tobacco, check and blunt those acrid Particles which irritate the bronchial Vessels of the Lungs, and set the Person a coughing to shake off those sharp Corpuscles. These are some of those special Advantages which Drinkers receive by smoaking, and which have gained this Herb such Repute, and brought it into such universal Use. In Indigestion from Coldness, Rawness, Weakness, or Palling of the Stomach, Smoaking helps much, partly as it opens the Sluices of the Mouth, enlarges the Quantity of Saliva secreted there, diminishing thereby the glandular Secretion of the Stomach; and partly, as the Salts of the Tobacco being swallowed, they stimulate and excite the lazy membranous Coats of the Stomach to a brisker Action: And lastly, as these Salts attenuate the secreted Liquor, stimulate the Glands, and deterge them from their sculking slimy Mucus; or if their excreted Liquor be too serous and thin, this Stimulation contracts their Vessels,

fels; straitens their Tubes, and diminishes
 the Secretion. In cachectic Disorders from
 a Slimyness, Lensor, or Viscidity of the Jui-
 ces, together with a Laziness and Inactivity
 of their containing Tubes, smoaking To-
 bacco is serviceable on a double account;
 both as its Salts break and divide the fizy
 Cohesions of the Blood, and give an agree-
 able Pungency to the Vessels, whereby they
 exert a stronger Force over their Fluids;
 move them forward with greater Celerity,
 and shake off their Viscidities more freely
 from their internal Surfaces. For the same
 Reasons Smoaking is useful in all Stuffings
 and Burdenings of the Lymphatics, either
 from the Weakness or Spiritlessness of their
 Tubes, or the Viscidity, Thickness, or Im-
 moveableness of their Juices. Neither is
 Smoaking hurtful to scrophulous Disposi-
 tions in full Habits, on the same Accounts;
 especially as it is hot, penetrating, and de-
 tergent, whereby it warms and gives a gen-
 tle pleasant Tension to the Fibres, its Salts
 thin, and separate the Cohesions of the
 Blood. Its Ashes taken out of the Pipe;
 and put into a hollow Tooth, *Chefnau* found
 to be an infallible Remedy against the Tooth-
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ach ; or those Ashes used to rub and scour the Teeth, every Morning, when they are black, yellow, or otherwise discoloured, clear the Teeth, whiten and beautify them, and take off that Scurff, or Animalcula, which too often waste and corrode our Grinders, and make us toothless before we arrive at middle Age. Such as deal too much in Sugar and other Spices, which consume and rot the Teeth, may preserve them much longer, if they daily use those Ashes, as well as they that use Tartar vitriolated. It is those Salts chiefly that are in the Ashes, which makes Tobacco of such singular Service in tetters, scrophulous, phagedemic, and obstinate Ulcers. Smoaking avails much in the sleepy Diseases, as Lethargy, Coma, &c. by disburdening the Vessels and Glands of much Phlegm, and warming and rousing up the soaked or half-drowned Nerves. And as it invigorates and blunts the Sharpness of the Stomach's glandular Juice, therefore labouring People will work a long time with a Pipe or two of Tobacco, before they complain of Weariness or Hunger. And as the Pungency of the Smoak on the Nerves of the Mouth,

Mouth, communicate an agreeable Stimulus to the other Nerves, it will be serviceable in Swoonings or Syncopes. In tickling Coughs, Rheums, and Catarrhs, from a saline Serum tickling either the Vessels in the Upper-end of the Wind-pipe, or the bronchial Vessels and Glands, smoaking Tobacco both entangles those Particles in its Sulphur, and enlarges the Drains of the Mouth, whereby these other Vessels are eased, and the Salts discharged with the Saliva. In time of Pestilence, or any other contagious or epidemic Distemper, Smoaking is profitable, both as the Pungency of the Smoak accelerates the Blood's Motion, and prevents the Alteration of our Mass of Blood, by the Attraction of the contagious Effluvia drawn in with our Breath, and swallowed with our Spittle, but especially as its much Sulphur embarrasses and sheaths those Effluvia ; hence all the Tobacconists Houses and Shops in *London* barred the Entrance of the spreading Contagion in 1665 and 66 ; even the Fumes of the Tobacco, by stirring it up and handling it, had destroyed the Venom of the malignant Effluvia, before they were sucked in with the Peoples Breath : But the

Use of this Herb is so enchanting, that they who are once accustomed to it, can hardly leave it off. The *Indian* Cannibals gave the first Knowledge of its Usefulness against Poison, to anoint their Arrows to shoot; and if the Skin be pierced, and Blood let, this Poison kills presently; but to prevent this Mischief, they carry along with them Juice of Tobacco in another Hart's Hoof; and when they have applied it to the Wound, tho' very great, they apprehend themselves out of all Danger; it takes away both Pain and Poison, and cures them speedily; the *Spaniards* have often tried and proved this; his Most Catholick Majesty himself, caused Sublimate to be applied to a Dog's Wound, and presently after laid on fresh Juice of this green Herb, which cured it. The same Juice applied to the Bite of a mad Dog, within half a quarter of an Hour after, has been known to cure it. Thus I have given some short Account of the Advantages of smoaking Tobacco, to which I might add several others, as its diverting Sleepiness and Drowziness after Dinner, its exciting and fixing the Attention at Study, its unloading the Glands of the Stomach

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and Mouth, of much Phlegm and Water in a Morning, &c. but should I come to treat of its medicinal Uses internally and externally, this would be drawn out beyond the Compass of so small Bounds as I am here confined to; therefore come we next to its Disservices, which are neither few nor small, if used immoderately.

Much Smoaking is more disagreeable in Summer than Winter, because it over-heats the Body, and raises a feverish Indisposition. Its Excess is worse in a warm clear Air, than in a thick, foggy, moist, cloudy, and rainy State of the Atmosphere; for in all these it is very necessary, as it rarifies the inspired Air, heats it, warms the Body, and helps it to shake off the Moisture from its Surfaces; it is worse to cholerick Constitutions than the flegmatic, because it raises the Blood's swift Motion, encreases its Acrimony, and the Elasticity of the Solids; it is not so suitable with an acrid, pungent, aromatic, stimulant Diet of Eatables and Drinkables much used, as with a viscid, tenacious, flatulent, clogging Food, which requires some Stimulus to the Solids to promote its Digestion, and their Action and Warmth.

Warmth. It is worse in Youthhood than in Manhood and old Age; for in the first it heats the Body too much, gives the Solids too great Play against the Fluids, whereby their Globules are too much broke, and driven into too small Divisions of Vessels; hence Danger of Fevers or Inflammations. All Inflammations and Ulcerations of the internal Thorax, as Lungs, Mediastinum, Midriff, Pleura, &c. or of the Stomach, discharge Smoaking, because it giving a Stimulus to the Solids, discomposes the Quiet which is absolutely necessary to the Cure of those Diseases; it also over-heats the Blood, increases its Motion, and its Sulphur and Acrid tend to thicken it where its next to Stagnation already in overloaded small Tubes, whose Tone is almost past Recovery. Such whose Mouths are often infested with too great Heats, Inflammations, and Pains, must not smoak, for the Salts of the Tobacco, and Heat of the Smoak, will irritate and exasperate that Disorder. Such as are fore troubled with constant or often Thirst, must likewise forbear it; for the excretory Ducts of their salival Glands, being either naturally too strait, *i. e.* their Diameters too short, they discharge not a necessary Quantity of

Saliva into the Mouth, to lubricate and moisten it and the Throat, or their Blood is too thick or salt; in all those Cases the Heat and Salts of the Smoak will drain out the small Moisture too forcibly, and leave the Parts to smart for it afterwards, through want of that Saliva. Such as have naturally thin, lean, dry Bodies, and at the same time live temperately, cannot bear Smoaking, for it drains out more glandular Juice than they can conveniently bear the Loss of, thickens their Blood, and disposes it to leave Obstructions in the capillary Tubes, and dries it too much; hence it is too saline, and its Salts abrade and destroy the Substance of the Vessels, and wear the whole Machine more. In frequent, returning, hectic, emaciating Disorders, or slow Fevers, Smoaking must not be allowed, for it makes the Circulation more rapid, the Fever runs higher, and the Body wastes more sensibly. Inflammations of the Eyes are made worse and more obstinate by Smoaking, as it increases the Blood's Motion, calls a larger Share of it to the Head by its Stimulation, and so more falls on the inflamed Vessels of the Eyes, except the Inflammation be of the scrophulous Kind, and then Smoaking may

may be indulged. It is bad in Convulsions, for it stimulates and wears out the Tone of the weakened Nerves, &c.

Chewing Tobacco is another Method of using it; this gives a greater Relief to a weak, watery, and lax Stomach, than the other; it is also better in Asthma's, Stuffings, and Loadings of the Lungs with much viscid Phlegm, as its Use is more constant, and its Effects more certain; the Juice or Spittle swallowed, keeps always a healthy, open Belly, kills all Insects or Worms in the Bowels, cleanses them. In tickling moist Coughs, with much thin Spittle, tending to a Consumption, it has been found serviceable. In cachectic Disorders, it contributes some small Part toward recovering the Body. Chewing will answer in several Cases (as well, if not better) where Smoaking is recommended, and will be injurious where that is unadviseable. In obstinate and frequently returning Catarrhs, it is of great Service; 1. As the Stimulation cleanses and discharges the salival Ducts and Glands from serous, viscid, saline, or insipid Phlegm. 2. As the Nerves are thereby warmed, invigorated, rouzed up, and made more active, and the Vessels rendered more elastic,

and less fufcipient of a Load of Phlegm. In paralytic or apoplectic Difpofitions, or in Obftructions of the optic Nerves, called *Gutta Serena*, chewing Tobacco is ferviceable, as a conftant Drain of fome of thofe viscus or redundant Serosities from the Head, which loaded and soaked the Nerves. Scabinefs, Leprofy, Elephantiafis, and obftinate cuticular Eruptions from an acrid State of the Blood, may reap fome little Benefit from chewing Tobacco; 1. As it helps to drain off fome of thofe acrid Salts with the Spittle, as the much acrid and grofs Sulphur of the Tobacco embarrafs and entangle the reft of the Salts in the Blood. As obftinate Epilepfies often arife from a watery or infipid Blood, and weak Nerves, chewing may not be improper, to draw forth fome of the firft by Spittle, and ftimulate and excite the laft. Wherever there is a Redundancy of loading, viscid, or ferous fuperfluous Humours, filling and diftending the Parts near the Mouth, chewing is of Service; as in a Relaxation of the Uvula without Inflammation, white Swellings on the Almonds of the Ears, a Tooth-ach from much fharp Phlegm, Deafnefs from a Relaxation of the Drum of the Ear, Diminution

tion of Taste, *Ranula*, or Swellings under the Tongue ; Dimness of Sight, &c. for it draws off much of those Serosities which distend, relax, and load the Parts.

Snuffing is so far from being *just good for nothing*, that some Cases defy all the Physicians Skill, and the Assistance of the whole *Materia Medica*, to give such Relief as it does ; *e. gr.* in a violent and obstinate Tooth-ach and Corrosion, or eating and mouldering away of the Teeth, by a sharp acrimonious Humour falling and lodging upon the small Sprigs of Nerves, which are inserted into the Roots, and nourish them ; which Nerves are thereby constantly pricked, pained, and tortured. How often does this become the *opprobrium medicorum doctissimorum*, and resist the Force of all internal Methods and topical Applications ? yet a constant Use of Tobacco-Snuff, by its Titulation and Irritation of the Glands and Nerves of the Nose, opens another and painless Sluice for this tormenting acrid Humour, *viz.* by the excretory Ducts of the Glands of the Nose, whereby the Teeth are relieved and saved, and Pain spared. The gross Sulphur of the Tobacco, at the same Time, sheaths up and blunts the acrid

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Humour brought to the Glands. This Case was hereditary to me, and from 15 to 28 Years of Age, I had very little or no Intervals from either a most acute, or more obtuse Tooth-ach, which many times, for whole Weeks, prevented so much as a Slumber, and at last consumed most of my Grinders, though I used all that could rationally be thought of to cure it; but at the Age last mentioned I took to Snuffing, and have continued it mostly since; and except three times that I laid it aside for some time, I never had the least Return of my Pains, nor Loss of Teeth; but within ten Days after I left off Snuffing, all my Teeth loosed, the Pain returned, and I was in *statu quo* till I took to Snuff again. I dare say, I have at least prescribed the same Course to above an hundred People since, from whom I have received hearty Thanks, for I have not found one Instance where it failed. Snuffing is likewise of Service in Disorders of the Head, from too much pituitous Matter resting upon the Glands or Vessels of the Brain; for the Pungency and Irritation of the olfactory Nerves lying so near the Brain, vibrates its Nerves, and helps them to shake off some Part of that tough Load, and in-

vite some Part of it to be discharged by the near Emunctories of the Nose. Therefore is it often found serviceable in obstinate dull Head-achs, from much Phlegm, or fizy Blood; and in sleepy Diseases, in Deafness, from much Phlegm or Pituita relaxing the Drum of the Ear; in Diseases of the Eyes, from *Pituita* or Sizyness of the Juices; in slight beginning Polypusses of the Nose, or in an Abscess of the *Sinus Frontalis*. Or who can deny the Usefulness of Snuff, to those unaccustomed with it, in hard Labour, expelling the dead Fœtus, retained Secundine, Hiccuping, &c. In those Cases they avail much; but they are as hurtful in frequent Hemorrhages of Blood at the Nose, in Inflammations of the Eyes, in Hernias, Ulcers of the Lungs, nephritic Pains, Pleurisy, Quinsy; for these require Rest and Relaxation of the Solids, and not convulsive Shocks and Contractions; and the Fluids want Attenuation, Prevention of Stagnation, and Diffipation in the inflamed and distended Vessels. But Excesses in any Use of Tobacco is inexcusable, often injurious, and not seldom the Cause of Mortality.

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But the greatest Inconvenience arising from habitual Smoaking is, that the Herb is of such an insatiating Nature, that those accustomed to it cannot leave it off without the greatest Mortification, and a kind of Violence or Force done to their Inclination. Nay, many times, rather than want it they will risque surprizing Hazards, and commit shocking Crimes to get it. It encourages needless, yea sinful Drinking and Drunkenness, enticing People to spend whole Days and Nights not only alone, but in Taverns and Alehouses, to the lamentable Consumption of Time, Money, and Senses, to the Neglect of Family, Business, religious, civil, relative, and social; and paves the Way to a most vicious and often a criminal Life; Parents consume their Children and Families, Fortunes or Profits, and Children their Parents's, whilst their Families are ready to starve; many have bartered away their best Effects for a Scantling of this enchanting Weed. Nay, Multitudes have sold one another into perpetual Slavery for a Trifle of it; and these not only Strangers or Captives, but their own Countrymen, yea their own Relations; Princes have not only sold their Subjects, but Prisoners

soners unjustly accused of Crimes ; and Masters for it and Spirits, dispose of their Servants and Slaves. With it the French-Pox was imported into *Europe* out of *America*, as the Small-Pox before had with our Trade, reached us from *Africa*. Smoaking is the jovial Repast of Cannibals or Man-eaters, and the grand Entertainment at idolatrous, pagan Festivals. Masters will not permit the Use of it to their Servants or Slaves, and such as use it can hardly find Masters or Buyers. Habitual Smoakers have a foul squalid Tongue, a white Mouth, their Senses of Smell and Taste are impaired and sometimes lost, the Smell of their Breath is more nauseous than that of a Boghouse, or of Wind broken downward after taking Flower or Milk of Brimstone. Their Complexion (if not red or carbuncled with drinking) is pale or bad. They are more liable to Thirst, for the Heat and Stimulus of the Smoak drains the Salival Glands, and leave the Pharynx, Larynx, and Throat dry. They are often cachectic, and their Liver is said to be too dry. They are always dribbling at their Mouth, and Spitting; hence, no Wonder Smoaking puts off Hunger, since it drains off the Saliva and other

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esurine Juices, which help to dilute, mix, and digest the Food, and excite a Sense of Hunger ; hence I have known some who have smoaked till they could eat none at all. Smoaking may also prevent or alleviate Cold, Drowsiness, Dullness, and Lowness of Spirits, as the Smoak warms, and the Heat and Salts titulate and corrugate the Fibres and Nerves. The penetrating, stimulating Nature of Tobacco-Smoak, is too sensibly perceived by delicate Persons, sitting in a close, low Room without a Fire, among a Crowd of Smoakers ; the Smoak makes them first sick, then faint, then puts them into some Tremors, and sometimes obliged to retire and unload their Stomachs. Tobacco being a great Narcotic, daily Smoaking must be highly injurious to the Brain and the whole nervous System ; and this Mischief is not a little increased by its abounding with acrid Salts. Several absolute Princes, have, on Pain of Death, prohibited its Importation into their Dominions ; whilst limited Governments permit and encourage it for the Sake of the great Duty it brings into their Revenues. *Simon Pauli's* Treatise on Tobacco, deserves to be attentively read ; herein he discusses that Question, whether Smoak-

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ing or Snuffing are most injurious, and answers it from anatomical Observations made on the dissected dead Bodies of the Users. King *James's* violent Prejudices against all Use of Tobacco, arose from his Aversion to Sir *Walter Raleigh*, its first Importer into *England*, whom he intended a Sacrifice to the Gratification of the King of *Spain*.

The outward Uses of Tobacco have been found to be many, and some of them very great, both to Man and Beast. The white Ashes left in the Pipe after Smoaking, is a good Dentrifice to clean and whiten the Teeth. A Slight Decoction of it from one to two Drams in Water, with some other proper Herbs, as much green Soap mixed with the strained Liquor, and injected warm in a Glyster, is an Emenagogue inferior to none, and answers quickly. A Glyster of a weak Decoction of Tobacco injected, effectually kills all Sorts of Worms and Insects in the *Rectum* and *Colon*; and Worms in Children, if some Snuff of it be laid on their Navel. It is also good in nephritic and flatulent Pains, if often repeated. A Wash made of the Decoction of Tobacco often used, cleanses the Body from all Insects, Vermin, or Worms on its Surface, and from
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naſty Eruptions thereon; but except it be very weak, I would not adviſe it for Scald-Heads. Genuine Tobacco-Snuffs ſprinkled among Horſe-corn a little moiſtened, and given them effectually and ſpeedily kills all Bott-Worms, cures their greaſed Legs, keeps their Belly open, cleanses them, ſmooths their Skin, and prevents foggy, fainty Sweats. Warmed Tobacco-Leaves applied and often repeated, eaſe Pains of the Head, Crick of the Neck, or other Pains from cold or flatulent Cauſes. A Linnen Rag dipped in Tobacco-Juice helps a Tooth-ach from Cold, if the Tooth is often rubbed with it, and putting a little hard rolled Tobacco-Leaf into the Tooth if hollow. Rubbing the Heels with the Leaves ſoon cures Chilblanes, and waſhing the Hands and Feet in warm Water and Salt after. Application of the warm Leaves, or their Juice warmed, and a Fomentation of their Decoction, eaſes arthritic Pains from Cold, and is uſeful in œdematous Swellings, if firſt waſhed with the warm Juice of the Leaves. Heated Leaves applied very warm to the Back, eaſe nephritic and windy Pains, if repeated often. The hot Leaves applied to the Navel and Share-bone gives eaſe in hyſteric Fits, and
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blow the Smoak up their Nose at the same time. The Juice of Tobacco poured into Wounds made by the *Indians* (poisoned Arrows dipped in Juice of white Hellebore, or other Poison) and their Powder laid on, quickly and safely cures them. The Air in Tobacco-Workhouses or Warehouses, is never infected with the Plague; its Leaves applied to pestilential Carbuncles bring on an Eschar, and hasten the Cure. They are also good against the Stings or Bites of Serpents or other venomous Beasts; or to stop the Bleeding of fresh Wounds, and hasten the Cure. The Juice and Powder of the Leaves cleanse, cure, and cicatrize old Ulcers, if other proper Care is taken at the same time. The warm Leaves laid to the Back and Breast relieve Crudities of the Stomach, and if at the same time the Belly is anointed with Oil, it loosens the Body. A strong Infusion of the Leaves in Vinegar, the Vinegar rubbed in and the Leaves bound on, are beneficial in Swellings of the Stomach and Spleen, if long used daily; or their Snuff may be used for the same Purpose. The Smoak sometimes relieves asthmatic People. Washing any living Animal, or its Parts, with a strong Decoction of the Leaves,

not

not only cures Ulcers, Sores, and Eruptions on the Skin, but kills all Worms, Maggots, Vermine, or Lice on the Body. A paralytic Limb or Part well sweated, and then bathed and fomented with a Decoction of Tobacco, has often been restored. Its Juice or green Leaf applied to the Stinging of Nettles, cures it.

As Excess, either in Smoaking or Snuffing, is injurious; yet that of the former is much more so, both as 'tis an Inlet to other Vices, and Regardlessness of Time, Money, Business, and Family, and deprives the Body of its Saliva, a Juice so necessary for Dilution, Commixion, Digestion, Gustation, Undulation of the Voice, distinct and clear Pronunciation, by moistening all the Parts of the Mouth and Throat, and preventing their Dryness and Thirst, &c. neither does the improper or excessive Use of Snuff want its Inconveniencies; for it may harm the Sight, impair the Smell, and often occasion a Sniveling in Speaking: I have known a monstrous Excess in it cause an Apoplexy; and I have seen excessive Snuffers when dying, have a strong, brown Lee run constantly from their Nose, some Days before their Death. And *Hoffman* says, that the
Heads

Heads of some executed Criminals (who had been great Snuffers) being dissected, the *Patera* of the Brain was black with Snuff; and he was informed, that the Heads of the *English* Soldiers who were killed in the *Bohemian* War, all who snuffed had their Brain in that Condition. Excessive Snuffing has, in Time, destroyed the Appetite, spoiled Digestion, caused Faintness, Sickneſs, and at laſt Vomiting large Cakes of Snuff.

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C H A P.

C H A P. VII.

VINUM BRITANNICUM, &c.

Of the Antiquity of Malt Liquors.

THE Art of Brewing, or extracting fermentable Liquors from Grain, is generally thought much more modern than that of pressing and preparing Wine from the Grape ; as this latter is commonly reputed less antient than perhaps it really is. *Buchanan*, in his *Scotch History*, makes mention of the Use of that Liquor very early in that Country, and calls it *Vinum ex Frugibus corruptis*. *Galen*, who lived at *Rome*, and flourished in the Reigns of *Antoninus Pius*, *Antoninus Philosophus*, and *Commodus* ; and *Dioscorides*, who was familiar with *Mark Anthony* and *Cleopatra*, were neither of them Strangers to Ale ; but it must have been Ale unhopp'd, and ill fermented : For they charge it with injuring Mens Health, prejudicing their Heads, Nerves, and membraneous Parts ; vitiating the animal Juices, and causing a Drunkenness more obstinate and painful than Wine. *Herodotus*, who wrote five hundred Years before

before Christ, ascribes the Invention of Brewing to *Ihs* the Wife of *Osiris* in *Egypt*, who lived many Ages before. This *Osiris* some learned Writers will have to be the same with *Misraim* the Son of *Cham*. Thus, as the Invention of Wine is ascribed to the Grandfather *Noah*, so is that of Ale to the Grandson *Misraim*.

But in truth it seems hard to prove, that either of these Liquors was unknown before the Flood. *Noah's* applying himself so soon after it to the Plantation of Vines, seems a plain Argument of his being acquainted with the Use of them before. Nor in all likelihood would this ever have been questioned, if it had not been for *Noah's* sudden Intoxication. It is supposed, that so wise, and so good a Man, if he had known the Nature and Effects of Wine, would not have fallen into such an Abuse of it, especially at a Time when he had seen the Irregularities and Vices of Mankind so severely punished. But this Argument will have small Weight, if we consider that *Noah's* Inebriation might easily be owing to a very different Cause. We may justly and naturally conclude, that the Earth must have been prodigiously enriched by the

Flood; and by consequence those Vines which the Patriarch made use of at that Time, might be much richer and fuller of Spirit than what he had before been accustomed to. Not aware of this, he might easily intoxicate himself by going only his usual Lengths. Many other Circumstances might concur in producing that unexpected Effect, without supposing the good Man guilty of Excess, or ignorant of his Liquor.

Nor does it appear that all Kinds of Malt Liquor were unknown and uninvented before the Flood. The Probability seems rather to lie the other way. We are plainly informed, *Gen. iv. 22*, that *Tubal Cain* understood the metallurgick Part of *Chymistry*. And why might he not equally understand *Fermentation*, which is a Branch of *Chymistry* much more easy and obvious than the other? To the Invention of this, Men might be led by mere Accident. Ripe Corn, either laid or cut down, swells and sprouts like Malt in the Couch or Cumm-heap; and when it is dried and ground into Meal, it is difficult to be made into Bread, will scarce bake, or stick together, and has a maltish Taste. Water poured, and standing on this Meal some time, tastes sweetish

like Wort, and will ferment of itself, and become a *Galen's Ale*. It may therefore be supposed that Men would early be directed, either by Art or Accident, to so obvious an Invention.

To which may be added, that if we consider the Lives and Manners of the Antediluvians, we shall find just Cause to suspect, that they were not confined to simple Element. It is probable their Passions were heated and agitated by more spirituous Liquors; at least, nothing could be more likely to produce that *Violence* with which *the Earth* was then *filled*. It is confessed, such Considerations as these do not prove that Malt Liquor was in Use among the Antediluvians; but yet they seem to afford sufficient Grounds for a reasonable Conjecture.

Of the Effects of fermented Liquors in general, and the Manner how they are produced.

The following Effects upon human Bodies, are common to all thoroughly fermented vinous Liquors.

1. When drunk they heat the Body. Though the Barley, whereof the Ale or

Beer was prepared, be very cooling, yet the fermented Liquor drawn from it warms the Drinker, *i. e.* it gently stimulates the Solids, and by consequence accelerates the Circulation of the Fluids : For should Malt Liquors or Wine give no Irritation, nor cause any greater Contraction of the animal Fibres ; such an Increase of the Blood's Quantity would be an Addition to the Resistance of the Fluids against the Solids, and so lower the Pulse instead of raising it. It also increases Circulation and Heat in the Body, from the Attrition and Attenuation of the essential Oil, and Salt of the Barley, in the double Fermentation ; whereby these two Principles, which lay dormant in the Barley, are set at liberty from the mealy and earthy Parts of the Grain, and become a subtile and volatile Spirit, easily digested by the Body's Heat. They become also animal Juices, and add new Vigour to the Body ; some affording fit Matter for Apposition to the Sides of the decaying Vessels, others giving a cementing Matter to join the sundry constituent Parts of the Solids of our Bodies together.

2. If a Man continues to drink more after he is heated, it raises in him a Briskness and

Vivacity greater than usual ; *i. e.* the increased Circulation of the Blood over the whole Body, and the Subtilization of the Spirits of the Liquor thereby, make its finest Parts run with greater Velocity over the Glands of the Brain, and cause a fuller Repletion of the Tubes with animal Juices, which flow plentifully into the Fibrils of the Muscles. Hence a stronger Disposition in the Person to Action, Motion, and Pleasure.

3. If the Man has not Power to refrain from Drinking, he will be intoxicated, or become drunk, *i. e.* his Vessels will be filled and distended with Fluids, that the Balance of Nature betwixt Solids and Fluids will be overcome; the latter overpowering the Resistance of the former, so as his Legs cannot bear him, but he staggers, stumbles, or falls like one paralytick. In this Distention of the Vessels, the Solids are relaxed, and the Blood is rarified from the Spirits of the Liquor entering into it. And if this Rarefaction be exceeding great, the larger Vessels or Arteries are so distended, as to compress the smaller, especially the Nerves; whereby is hindered from entering into the Heart such a Flux of animal Spirits, as is necessary to cause a vigorous Contraction,

that may project the circulating Blood to the Extremes of the Body : Hence the drunken Person looks pale, from the collapsing of the Blood Vessels on the Surface of the Body. But when the smaller Vessels are very much compressed by the larger, the Brain and Heart abounding with Capillaries, must be so much distended, as to have their Tone weakened, and by frequent Debauches be destroyed ; and the great Drinker be arrested by Loss of Appetite, Indigestion, Tremors, Loss of Memory, Palsy, Apoplexy, Swimming of the Head, Convulsions, &c. Or if the Drinker's Solids be naturally very stiff and elastic, and the Liquor drunk be very spirituous, he becomes furious and frantick. If in this Circumstance he goes to sleep, he will awake either more furious and raving, or grievously afflicted with a violent Head-ach ; and that from the too great Distension of the Blood Vessels of his Brain, the violent Struggle of the Solids against the Fluids, and their mutual Resistance of each other, whereby the fatigued Vessels and Membranes are sensible of Pain. This uneasy Sensation is also from the Remains of the Salts of the Liquor in the Capillary Vessels of the Brain, stimulating

ting the delicate Nerves and Fibres. No Liquor produced without a previous Fermentation, can inebriate the Drinker; for Wort drunk in Plenty provokes Vomiting and Looseness, but not Drunkenness. The Effects of too much Poppy, Hemlock, or Mandrake, taken into the Body, are Stupor, not Drunkenness; that is, their Juices consist of gross, tenacious Parts, which sheath up the fine Parts of the Blood, whose Use is pleasantly and smoothly to promote the Vigour and Vibration of the animal Fibres, and to further Circulation. And these Spirits ceasing their delicate Sensation, the Solids play languidly, Circulation becomes exceeding slow, the Vessels relax, the Person becomes pale, stupid and senseless. Opium makes drunk by fusing and over-rarifying the Blood; so as it takes up more room, and distends the Vessels; whereby the Fibres and Vessels are relaxed, become weaker, and unable to resist the Blood.

4. The Spirit of fermented Liquors is inflammable, and commiscible with Water.

5. They promote Perspiration if drunk in large Quantities.

6. They force Urine, not only by increasing and diluting the Blood, but by the Pungency

Pungency of its Salts, gently stimulating, and causing a greater Secretion, while the Oils of the Liquor at the same time serve to relax the Passages.

7. They cause Thirst, from a speedy exhaling of the more spirituous and fluid Parts, and leaving the grosser behind; and from the Salts of the Liquor irritating and corrugating the Glands, whereby the Secretion is lessened; and also the Rarefaction of the Blood throws the greater Quantity into the larger Vessels, and compresses the lesser.

Of the Nature of Malt Liquors in general.

To gain a more satisfying Knowledge of this vinous Liquor drawn from Grain by a double Fermentation, first of the Grain, and then of that Liquor wherein the fermented Grain was infused, let us take to Pieces the Composition, and examine each Ingredient.

Common *Water*, which is the Foundation, or that which bears the greatest Bulk, not only in this, but in all other potable Liquors, is the sole, innocent, and proper Fluid; not only for extracting the nutritive Parts of the Grain by Penetration, Dilution, Separation,

Separation, and Diffolution thereof, but for its Friendliness to our Natures, and Agreeableness to the Parts of our Blood. But this Article having of late been the Subject of so many Enquiries and Discourses, I shall pass it over.

The next chief Ingredient is *Malt*, which communicates to the Water the whole Parts of the Grain, which were prepared and fitted for the Nutrition of our Bodies ; and these are its essential Oil, Salt, and some of its earthy Parts, which have been rendered very fine and minute by the Tumefaction, Fermentation, and Diffolution of the Malt in boiling Water ; and after they are boiled in the Wort, and it is put to ferment with the Yest, their Parts are still more attenuated, broken, and fitted for passing the small Vessels of the animal Body, and being assimilated to the Substance thereof. Nay, into such minute Parts are they divided, that if Ale be warmed in an open Pot, and let stand two or three Hours to cool, the whole Spirit is exhaled and gone, and yet the Measure not sensibly decreased ; but the Liquor is a vapid, viscid, heavy Stuff. What hinders the Evaporation of the subtil and spirituous Parts of the Wort while it is boiling,

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is there not being fully separated and divided, but wrapt up and bound together in a soft, lubricating, tenacious Substance, like a gross Oil, whose Particles are hooked into one another. This thick Matter is attenuated, and ground down afterwards by the intestine Motion and Attrition of the Parts one against another in the Action of the Fermentation, and is much of it changed into volatile Spirits. What remained of the Malt after its Fusion in boiling Water, was only a *Caput mortuum*, or an insipid, earthy, chaffy Husk, out of which all the Spirit was extracted in the Wort in Form of an Oil; and all the Salts, with some of its subtilest earthy Parts, and the Dregs which fall to the Bottom of the Cask after the Ale is tunn'd and ripe, are only the grosser Parts of the crusty Scurf robbed of the finest Spirits, and consist chiefly of Earth, fixed Salt, Phlegm; in which a brisk Spirit is entangled.

Hop is the third Thing in the Composition. It is an admirable Bitter, and strengthens the Stomach, helps it to throw off immoderate Doses of Ale. It is a great Provoker of Urine, not only by its subtilizing the
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the Ale, but by causing a gentle Stimulation in the secretory Passages of Urine. Were it not for this, great Drinkers would be drowned in a Deluge of Serum. Hops prevent the Viscidity and Luscioufness that Ale would otherwise have after Fermentation; they give a grateful Taste; they fine the Liquor, and hinder the Mustiness, Thickness, and Ropiness, which would make it nauseous and unwholsome; they open Obstructions of Liver and Spleen, and other Viscera, preserve the Patency and Clearness of the Vessels, hinder their being filled up with the Lentor and Slime of the Drink. Their Flowers boiled in Water are esteem'd an Antidote against Poison, and a Cure for the Itch. Their Syrup was formerly admired in pestilential Fevers. The Tops of the young Plant boiled, and eaten like Asparagus, are cooling, laxative, and diuretick, and free both Intestines, Kidneys, and Viscera of any oppressive Load.

The last thing is *Yest* or Barm, a Substance consisting of a great Quantity of subtile spirituous Particles, wrapped up in such as are viscid. When this already fermented Substance, or Yest, is mixed with the Wort,

* Wort, it both excites sooner, and carries on more regularly that intestine Motion caused by the Occursions and Collisions of Particles of different Gravities, whereby the spirituous Part will still be striving to mount up to the Top, and the viscid ones, on the contrary, retard such an Ascent, and hinder the Evaporation and Loss of the Spirits. From these two co-operating Causes, the Particles extracted from the Grain, will, by frequent Intercourses and Collisions, be so broken, as continually to increase the more subtile and spirituous Parts, until all that is possible to be made so by Attrition, are disentangled from their Viscidities. This intestine Motion of the Liquor is both visible and audible; and this Action and Attrition of its Parts, are discoverable from the Heat they raise in it, and the Froth they send up to the Surface. And that this Action is what breaks the Viscidities, and sets at liberty the subtiler and finer Parts, or
breaks

* I consider Wort as a heterogeneous Fluid, whose Parts must necessarily interchange their Positions, till each has obtained such an Elevation, as corresponds to its proper Gravity. But this natural Disposition of these heterogeneous Parts to interchange their Places, till each obtains its proper Gravity, being not sufficient to break and separate these Viscidities, which entangle the spirituous Parts, and to prevent their exhaling at the Surface; it is necessary that some already fermented Substance be added to, and mixed with it, that
promote a regular, speedy, intestine Motion.

breaks the coarse Oil into such small Parts, as to become a most subtile Spirit, is manifest :

1. Because neither the Infusion of ground Barley, nor Malt, will produce any Spirit before Fermentation ; for take Wort, and put it in a Still, and raise what Degree of Fire under it you please, and as long as you will, you shall not bring over any inflammable Liquor.

2. Because no Infusion of ground Barley, or Malt, is capable of making the Drink brisk, and intoxicating ; but after Fermentation, the spirituous Parts of the Wort are separated and set loose, so as to intoxicate by the Smell and Vapour.

Thus we have seen the Nature, Manner, Design, and Effects of Fermentation in Malt Liquors, with their Composition, Principles, and heterogeneous Parts, and scruple not to call them vinous Liquors, or true *British* Wines, seeing they are produced from a domestick Grain, or Fruit, by Fermentation, as the foreign are from the Fruit of the Grape : And since the Effects of foreign Wines and ours are near the same, and ours serve for the same Purposes in the common Affairs of Life, as theirs do.

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If, lastly, we put the sundry Ingredients of Malt Liquors together, we may observe, that they afford us Meat, Drink, and Medicine: Meat, from the Corn whereof Ale is made; Drink, from the Water wherein Malt was infused; Medicine, from the Hops boiled in the Wort. The want of the last procured Malt Liquors the Disgrace of ancient Times, as we see from *Dioscorides* and *Galen*; for then its Viscidity, Thickness, and Lubricity, occasioned a Weight and Pain at the Stomach of such as drunk much of it; Flatulencies, Belchings, Crudities, Fulness, Heaviness, Sluggishness, Swelling and Hardness of the Belly, Obstructions in the small Vessels, Viscidities in the Blood, Foulness of the Glands, Paleness of Countenance: And in contrary Temperaments, it caused bilious Vomitings, obstinate Drunkenness, and Pain of the Head, Loathings, and Inflammations.

*Of the Choice and Usefulness of Malt Liquors
in general.*

The Account given of Malt Liquors under the last Head, suggests the following Particulars, which the Reader may call either Corollaries or Observations, as he thinks fit.

1. It may be observed, that the Grain communicates to the Liquor all such Parts as could be of Service to our Bodies. It affords fine earthy Parts to make up the Loss of the Bodies Solids ; and an essential, subtiliz'd Oil to cement those Parts to the Sides of our Vessels. It yields its Salt in Form of a Spirit to keep up the Blood's Momentum, preserve the Action of the Vessels, and prevent Corruption and speedy Cohesions forming in the Fluids. So that the Grain itself, prepared in the finest manner, could be of no more Service to us, if eaten ; for the Grains are only the Husks, which would be winnow'd or sifted from it ; and the gross earthy Parts would go off the Body in Fæces.

2. Hereby we learn what Malt Liquors we should make choice of for general Use : And they are such as have been made of white, large, sleek, smooth-skinn'd, full-ear'd, ripe Barley ; which grew on Clay-ground, and has been carefully malted, and which have been brew'd with insipid, clear, soft Water ; the Wort well hopp'd, and boiled till the Hops fall to the Bottom ; thoroughly fermented, tunned up in an used sweet Vessel, and let stand till all the gross

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viscid

viscid Parts are fallen to the Bottom, and the Liquor becomes transparent, sparkles in the Glass with small Bubbles, makes a grateful Pungency upon the Tongue, and is neither stale, nor vapid. These Malt Liquors approach near the Nature and Goodness of Wine, and are much preferable to a great deal of our common Draught.

3. Hence we are sure, that such Malt Liquors make a speedier Recruit of that Waste our Bodies have sustained, either by much Exercise, hard Labour, much Fasting, or some great Evacuation, than any solid Food is capable of doing. Because when we eat the most nutritious, solid Food, before it can come to nourish the Body, it must undergo the Actions of Mastication, Digestion in the Stomach, Dilution, and Attenuation there by the glandular Juices, a further Preparation in the Intestines, and Attrition of its Parts, before it can be impell'd the Laeteals, where the Chyle sent off from it has again the Action of the Mesentery, Laeteal Vessels, Mesaraick Glands, Thoracick Duct, Receptacle of the Chyle; and lastly, the Commixture with the Blood, and further Comminution of its Parts in the Lungs and Vessels of the Body,

Body, before it be capable of entering the finer Vessels where Nutrition is performed: For the crude Chyle, and Mass of Blood, are too thick to get into the minute Vessels, Nerves, or Lymphaticks. But the nutritive Parts of the Malt Liquor, by their double Fermentation, are broken and dissolved into such minute Particles, as some of them are instantly able to enter, and pass the delicate Tubes; afford animal Spirits and nervous Juices; and so relieve the weak, faint, weary, and exhausted, almost that very Moment they are swallowed down.

4. But this shews us, that such speedy Supply must be of shorter Duration than Nourishment afforded the Body from solid Food. For the thorough Digestion, great Attenuation and Attrition of the nutritive Parts of Malt Liquors having reduced them to a Spirit, they presently pass the whole Vessels and Secretions of the Body; and those of them which are not in a few Circulations attached to the Sides of the Vessels, and assimilated to the Nature of our Solids, will quickly fly off from the Body in imperceptible *Effluvia*. But the Nourishment we receive from solid Food re-

quires a gradual and longer Digestion and Attrition by the digestive Powers, to separate it into such minute Parts, as are fit for Apposition to the Sides of the Vessels, instead of those worn off and lost; and to repair and keep up the Body's Strength and Bulk. They are prepared and assimilated more slowly; and still some new Parts remain for several Hours to be reduc'd to a proper Figure and Bulk; and consequently their Expence must be less, and the useless Parts of them chiefly will be expelled the Body, and little of their spirituous Parts will be lost.

5. Here we have the Reason, why a clear small Malt Liquor drunk to our Victuals agrees better with most Constitutions, than only simple Element; for a thin, fine Table-beer carries sufficient Fluid into the Stomach for diluting and macerating the Food eaten; which is the only Reason alledged in favour of Water's Preference. And even this Liquor is impregnated with many nourishing Particles of Grain, which immediately pass into the Body, refresh and strengthen it, till the solid Food be digested. And on this account, he who has such a fine Diluter, though he ordinarily eat

eat less solid Food than he that is accustomed to simple Element, yet may be said to have eaten a larger Meal. The small vegetable Salts in this Liquor, will also give a gentle *Stimulus* to the digestive Faculties, so as to make them act with more Vigour and Briskness, and promote Digestion, Secretion, and Evacuation. These minute Salts in the Liquor, joined to those of the Food, will contribute something towards securing the Vessels and Glands from a very adhesive *Mucus*, as simple Element does it by Dilution. On this Account is such clear, well-hopp'd, ripe Beer, very serviceable in cachectick Bodies, who have lived temperately, but have had the Misfortune of looser *Stamina*.

6. From hence also it is easy to account, why a Neglect of solid Food, and depending upon Malt Liquors for Nourishment, must at last take away Appetite, spoil Digestion, and cause Corpulency; for these are chiefly the Effects of mild Beer and Ale; and these abound with many gross oily Particles, which not being reduced to a subtile Spirit, are strained off by the lateral Vessels, and sent to the *Sacculi pingui-feri*: For, these going off by the capillary

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Arteries,

Arteries, where the Circulation is flow, and the Attraction of the different Parts of the Blood great; the small fat Globules approach and cleave to one another, and are repositied in the *Sacculi pinguiferi*. And this Abundance of Fat relaxes and lubricates the Fibres and Vessels, impairs their Vigour; and also the spirituous Parts of the Liquor quickly evaporating, the viscid are continued in the Blood, fur up the Infides of the Vessels with a *Mucus*, or Slime; so that the Increase of the Body's Bulk, as to the whole Habit in corpulent People, depends not upon the Increase of the Solids, but on their Vessels being extended and filled with the congested stagnant Humours of Fat and Slime. Which increased Bulk strengthens not the Body, but is troublesome, weakens and suffocates it. And not only are the Fibres of the Stomach relaxed, like the rest of the Body, but its wrinkled Coats and Folds are lined with a thick slimy Matter, which both absorbs the glandular Juice, and renders it viscid, and unfit to penetrate the Food, and separate and dissolve its Parts; and lying between the Stomach and the ingested Food, the Strength of the Stomach is exerted on this *Mucus*,

cus, instead of breaking and digesting the Meat.

7. From hence we may see the Reason why Chyle prepared in the Stomach from Grain and Flesh of Animals that feed on Vegetables is always white ; but the Chyle from Ale, Beer and Wine, is not. For all white Chyle is from a just Admixture of the gross Salt, Oil and Phlegm ; therefore all Emulsions are white, and Chyle made from Grain is of the same Colour. But when the Salt, Oil, and Earth of the Vegetable is divided, and the two first subtilized into a Spirit, then is the Chyle of the Colour of the Liquor.

8. Hence learn we the Reason why Malt Liquors, moderately used, are of great Advantage to the hard Labourer ; for they inspire him with new Life and Spirit, when he is weak, faint, and almost exhausted by Labour. They are also a Nourishment to him, when either the Warmth of the Weather, or Heat of his Body has impaired his Appetite and Digestion. They are a Supply to the low Diet, and mean Provision of the Poor. And at Night, when his Solids are relaxed by the great Expence of animal Juices through the preceding Day's

hard Labour, and the Evening Cold comes on, and shuts up his Pores, and obstructs the perspirable Matter in the excretory Ducts, and the thinner Part exhales, and leaves the grosser to clog up the Passages, then a moderate Cup drives away the Sense of Pain, raises the drooping Spirits, quickens and strengthens the languid Pulse, promotes Perspiration, and frees the Blood from that Matter which is apt to stick in the excretory Ducts. The hard Labourer may dispense with a reasonable Quantity of the strongest Malt Liquors; for his constant Action breaks the Viscidities of the Drink into good Nourishment, and thereby makes amends for the Meanness of his Diet. And as the fine earthy Parts of the Grain are easily converted by him into good Nourishment, so its oily Parts are of use for lubricating the Fibres, and disposing them the better for daily Action: As likewise they prevent their over-heating, and their too violent Attrition.

9. Lastly, it ought to be observed, that Malt Liquor, especially that which is strong, is injurious to the Sedentary and Valetudinary of all Constitutions, because it abounds with Viscidities, and by consequence requires

a great muscular Force, and much Action, to attenuate it, in order to make it pass the Secretions of the Body, without leaving a Mucus upon the small Vessels to obstruct them; or depositing too great a Store of oily Particles in the Body, to relax and weaken its Solids, before it come to the several Shores of Evacuation. Whoever therefore labour under any chronical Distemper, or are very unactive and averse from Exercise, must be directed to more proper Liquors. But I must take Notice, that this no more tends to diminish the Value of Malt Liquors, than that of strong Food; which must be forborn by the same Persons for the same Reasons.

At what Times of Life, and Seasons of the Year, Malt Liquor is the safest and most proper.

It would be a dangerous Practice in Parents, to indulge their Children in the Use of these Liquors, considering the Laxness of the Solids in Infancy, and the great Quantity of Fluids. All Malt Liquors having so much Viscidity in them, that they would certainly produce the same Effects

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as a viscous or tenacious Food; *viz.* Oppression, Weight, Pain, Indigestion, Wind, Belchings, Acidities, and Crudities in the Stomach, and in the Body; Sluggishness in the Belly, a furring up of the Insides of the Intestines, and small Vessels; Obstructions in the Glands, and curdling of their Milk; and, by consequence, Sicknes, Gripes, and Looseness: And all these, especially if the Drink was unhopped, or half fermented, new, or musty: Or was the Liquor full hopped, well fermented, and clear; then are its Salts stripped of that Coat wherein they were wrapp'd up; then do they cause Thirst, Coagulation of the Humours, Pains, Tremblings, Weakness, Obstructions, Inflammations, Convulsions, and sundry Sorts of Fevers. The Viscidity of Malt Liquors, and the Imbecility of the Child's Solids, will hinder their due Digestion, and necessary and timely Evacuation. Hence a Plethora, with the Diseases which proceed from it. But these bad Effects of Malt-Liquors in Children, are chiefly from their Incapacity for such Labour and Exercise, as might digest the otherwise harmless and healthful Liquor.

Neither

Neither is its Use in the first Stages of Youth adviseable ; for it forces the Increase and Growth of the Body, and turns Youth into Manhood. It also exposes the Body to the Mercy of all those Diseases which arise from too much Blood, and abundance of Humours ; not to mention that it is apt to encourage and excite the Passions too much. Too early used, it likewise often occasions Stone, Gout, Gravel, Coughs, and Consumptions.

I would further advise to a sparing Use of all spirituous Liquors for a Year or two after Growth is at an End. For the Elongation and Enlargement of the Vessels being then over, such Persons are then peculiarly exposed to Diseases from a Plethora. Accordingly we find in Fact, they are more liable to Inflammations, Fevers, and Consumptions, at that Time, than afterwards. In Manhood these Liquors are unquestionably the safest, the Body being then most vigorous, and best able to concoct and carry them off in Perspiration, upon the account of that higher Degree of Labour or Exercise, which generally accompany that Age. At the same time it must be granted, that old Age, in a particular manner,

ner, requires the Assistance and Benefit of spirituous Liquors, that Circulation may be kept up, and natural Heat preserved ; that the Nerves and Vessels may be supplied with proper Juices, and the several Secretions promoted. But though old Men stand in more need of a moderate Quantity, yet they are more injured by Excess, and are therefore doubly concerned to guard against it.

If it be here enquired, whether Malt Liquors be so proper for old People as Wine ? I answer, that this Point must in a great Measure depend on their respective Constitutions and Customs. Besides, each Liquor has its Conveniencies and its Inconveniencies. That of Malt is very apt to increase that Phlegm which old Folks are so much subject to, as Wine contributes to lessen and prevent it. On the other hand, Malt Liquor seems better adapted to keep the Nerves supple, and prevent that too great Dryness and Tensity of the Fibres, which is the Effect of old Age, as most Wines contribute to increase it. Perhaps it would not be a bad Rule for old People to drink Wine in moist Weather, and Malt Liquors in dry, I shall only add, that those
old

old Men who adhere to Malt Liquor, ought to take special Care to avoid that which is new and viscid ; and the Wine-Drinkers, to deal chiefly in such Wines as are soft, smooth, and mellow, except where some particular Circumstance indicates the contrary.

Much Malt Liquor, or indeed any other that is strong and spirituous, is very improper in Summer, and hot Weather. For the Pressure of the circumambient Air being abated, the Particles of Air contained in the Blood, unfold their Spring, and force the Blood to possess a larger Space than it filled before : Wherefore it will be rarified into much larger Dimensions. The Solids at the same time being relaxed by the Heat, the Diameters of the Vessels and Lymphaticks will be enlarged, and rendered passible by the more saline, viscid, or even globular Parts of the Blood. For although the Air be rarified, and the Vessels dilated, yet is not the Blood more fluxile ; but its Globules being blown larger by the contained Air, upon the diminished Pressure of the Atmosphere, it will become less fluid, and unfitter to pass the capillary Vessels. And therefore the Blood in this rarified and less fluxile Condition, being got into the Tubes

of the relaxed Capillaries, and thence into the secretory and excretory Ducts, its fluid Parts will presently fly off; the grosser remaining, and depositing a slimy Lensor on the Sides of the Capillaries, and the Orifices of the Glands, and more complicate Arteries, and producing Fevers intermittent, and remittent. If the Air be very hot and moist, a liberal Use of this Liquor will quickly dispose the Body for malignant and putrid Fevers, from the Dissipation of the Blood's Serum through the Skin, and the Retention of the thicker and more viscid, which is unfit for a regular Circulation. If the Air be hot and dry in Summer, and Spring, ardent Fevers and Inflammations will be likely to overtake the Drinker. Now seeing such are the Effects of hot Weather on human Bodies, how much worse must the Case be, when we take into our Stomachs large Quantities of a Liquor, one Part whereof is very spirituous, and another very viscid; the first of which will soon exhale from the Body, because of the Fineness of its Parts, the Laxness of the Pores, and Patency of the Vessels, and leave the other Part behind, to taint the whole Mass of Blood, dispose it to greater
Combi-

Combinations and Cohesions, and increase the slimy Lentor in the Vessels, and the Dryness and Irresolvableness of the Mass. Hence intermittent, remittent, nervous, pestilential, malignant, ardent, slow, putrid, and inflammatory Fevers, &c.

Therefore to prevent these Dangers, it is necessary that the Malt Liquor drunk in hot Weather be only a middle Beer, ripe, transparent, and pungent, neither vapid nor sour, nor thick and musty; drunk especially towards the Evening, that it may revive the Spirits, and at the same Time nourish the Body. When the Stomach is not able to digest a necessary Quantity of Meat, this quickly makes up the preceeding Days Loss. But great Care should be taken in the Use of Strong Beer; for the stronger, the more viscid it is, and the greater Load it lays upon the Vessels, and disposes to some Illness. And as Excess ought resolutely to be avoided at all Times, so more especially in a hot Season. For besides all ill Consequences of an inflammatory Nature, it throws the Blood into such a State of Viscidity, as renders Dilution almost impracticable. And at the same time the Nerves are doubly relaxed. Hard Labourers

ers may safely drink Ale at any Time of the Day, if they be not immoderate ; for its Viscidity is so far from being injurious to them, that it is ground down by the long and great Action of the Muscles, and turned into Nourishment. I shall only observe further, that Travellers of long Journeys in hot Weather, should use Ale and Strong Beer very sparingly, seeing that their Riding promotes Perspiration, and a copious and speedy Discharge of the thinner Parts of the Blood, and by Consequence disposes the rest to Inflammations and Fevers.

Of the Differences of Malt Liquors.

Having hitherto considered Malt Liquor in general, I shall now make some Inquiry into the particular Sorts of it.

Malt Liquors differ in respect of the *Grain* whereof they are made. Thus Pease, Beans, *French* Beans, Chick Pease, &c. afford a more tenacious, heavy Liquor, and such as requires a stronger Constitution to digest them. Wheat and Barley produce more nourishing and strengthening Liquors, seeing their Parts are more separable, and sooner reduced to a wholesome Spirit. Oats
yield

yield a more deterfive kind of Drink, which is lefs viscid, has more earthy Parts, and a smaller Quantity of Oil in it.

Our Malt Liquors are divided into *Ale* and *Beer*. The former has a lefs Quantity of Hop, the latter a larger. *Ale* is smooth, softening, balsamick, and relaxing. The vegetable and essential Oil of the Grain is, grosser, and not so much separated and divided, as to be brought to so penetrating, subtile, and active a Spirit; therefore must this Liquor abound with a coarse Oil, a viscid Phlegm, wherein its Salts are wrapped up. *Beer*, or well-hopp'd Malt Liquor, is of subtiler Parts, and its Bitterness makes it more grateful to most Stomachs. The Hops make it more spirituous, subtile, rigid, and drying. They help much to separate the more coherent and viscid Parts of the Malt. Therefore is the Liquor less disposed to run into such Cohesions as would quickly make it ropy, vapid, and sour. It is also of easy Digestion, passes the Secretions sooner, and is more quickly evacuated. All strongly hopp'd Malt Liquors have their essential Oils broken smaller, and exist more universally in the Form of a fine, subtile, penetrating Spirit, through all the

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Parts

Parts of the Liquor. But where the Parts of the Grain are less divided for want of Hops, the Liquor after Fermentation still retains a clammy Sweetness, and soon becomes acid, and unfit for drinking. For the fine vegetable Oil and Salts being still entangled, and wrapt up in the viscid Cohesions of the Liquor, its Parts will be obtuse, and taste sweetish.

Malt Liquors differ in their Degrees of *Strength*; and the stronger they are, the greater is their Viscidity, and the more of it they carry into the Blood. Which Inconvenience the spirituous Part cannot prevent; for the Spirits (as I said before) being the smallest, subtilest, and most active Part of the Liquor, they will pass the Strainers of the Body soonest, and get off first. Common *Table Beer*, and middle Ale, being smaller Liquors, have so much Strength in them, as to raise a pleasant gentle Warmth and Titillation in the Stomach, and are so thin as to dilute Food, and quench Thirst readily, and must certainly be the best in general, seeing they carry the least Viscidities into the Blood, and the least Salts into the small Vessels, to prick and pain them; and occasion not a ropy Chyle to
pass

pass the Lacteals, nor cause great Cohesions in the Blood. As *Yorkshire* is justly noted for the best Ale, so may it be taken Notice of for the worst Small Beer, if that wretched Stuff called *Grout* deserve the Name. This is nothing but the Washings of the insipid Husks of Grains, (which at that Time have nothing further separable from them, and yield but a coarse, nasty, earthy Matter) the Washings of the Brewing-Vessels, and a third Decoction of the Hops; and into all is cast the Dregs or Ground of the other Worts. Possibly some may likewise throw in the nasty vapid Stuff that is under the Working-casks of new-tunn'd Ale, or under the Spiggot of the present Tap. This is such abominable Trash, that it deserves no further Notice. I shall only observe, that it is well for the poor Labourers that drink it, that they are Labourers, otherwise it could not fail to dispatch them in a short Time.

Malt Liquors differ in their Colour, being either *brown*, *pale*, or *amber-coloured*, as was the Malt from which they are brewed. The *brown* Malt is strongly dried, has many fiery Particles in it, affords a less viscid, or thinner Ale; which, unless it be

very strong, more easily and quickly passes the Strainers of the Body. But this Sort of Ale, from its containing the fore-mentioned Particles, is more apt to occasion Looseness and Gripes in those that are unaccustomed to it, and to give Sickness and Headachs next Day. But it is a very great Error to make either this or any other Malt Liquor too strong; for thus the Benefits of the Liquor are lessened, and the Inconveniencies of it multiplied and increased.

Pale Ale is brewed from Pale Malt, which is slenderly dried. It retains much more of the Grain in it, than that which was scorched or half burned. Therefore the Liquor made from Pale Malt is most nourishing, and should for that Reason either be brewed smaller, or used more sparingly, because of the Viscidities which must abound in this Liquor, if it be strong.

Amber-coloured Ale is a Mixture both of the Brown and Pale, and therefore must partake of both their Virtues and Vices, in a lower Degree.

We may also observe the Difference of Malt Liquors in respect of their *Age*. The eldest, and well kept, being less viscid;

Age, by degrees, destroying the Tenaciousness of their Parts, making them smaller and of readier Digestion, and quicker Secretion. But they will still come to Perfection, and then decay, in proportion to their Strength. For any Malt Liquor kept till its Particles be broken into as small Parts as they are capable of, is then constantly at its best; but after that it gradually again goes to Decay, until its whole Spirits be again exhaled, and nothing remains but a vapid four Mass. But more on this Head in another Place.

They differ also in their *Preparation*. That which is blinked, is apt to cause Cholick, Pains, and Gripes, in those that have not been used to it.

They differ from their *Manner of keeping*; some being bottled, others barrellled. If Malt Liquors be bottled before the Fermentation is over, they cause Wind and Vapours, Convulsions of Stomach and Intestines, Vomitings, Surfeits, Looseness, and Cholicks.

*To what Constitutions, and in what Cases,
particular Malt Liquors are agreeable,
or disagreeable; with the Reasons thereof.*

I. This Diversity of Malt Liquors, tho' it may be an Argument of their general Use and Service, yet it suggests to us a Necessity of considering how to make a proper Choice; for we see Malt Liquors are not only different, but the Difference between some and others of them is as great, as between the most opposite Liquors; I mean, in respect of their Effects and Operations. As some are palatable, and others unpalatable to a very high Degree; so while some are wholesome and good in most Cases, others may be look'd upon as half-Poison. There is a great deal used in this Nation of such a Nature, that any body would wonder how it is either drunk or digested. All that can be said, is, that continual Action and strong Labour may account almost for any thing. This it is that gives Men an Appetite for such miserable Stuff, and at the same time enables them to drink it with Impunity. However, it concerns those who are less exercised, not to drink these
Liquors

Liquors promiscuously and indifferently, but to be somewhat curious in their Choice, and to consult their Constitutions as well as their Palates. Among Wine-drinkers, Men may, and often do suffer greatly by an ill Choice : But if the Ale-drinkers heedlessly swallow whatever may happen to be set before them, they have Reason to apprehend worse Consequences, and must expect to be greater Sufferers. On this Account, I hope, they will not reject the Endeavours of one, who offers to assist them in distinguishing ; and that at least they will excuse the Hand that points out which Sorts are innocent and wholesome, and which are contrary. But to proceed.

2. Seeing *Beans, Pease*, and other leguminous Grains, are of more tenacious Parts, and abound more with an essential Oil, and much vegetable Salt, they must afford more and stronger Ale and Beer, and such as will keep longer than either Barley or Oats, and be of far greater Service to hard Labourers, and such as use much-Exercise, and are of a strong Constitution. They will afford more Spirit, Strength, and Nourishment, and might supply a great Part of our own Demands at home, and be better

for the hard-working Vulgar. In the mean time, the Product of our Barley might be made into double Ale, or Beer, which is a rich, friendly, balsamick Liquor, will keep several Years, may be transported into both *Indies*, retaining still its full Strength and Goodness ; nay, rather become much richer and finer by the Sea, and exceed most Wines ; and would be of as great Esteem and Request with Foreigners, as their Wine is with us ; besides the great Advantage and Addition that would hence arise to the Crown Revenues.

3. Seeing all such Grains as are reducible to a fine Meal, or Flower, are capable of a double Fermentation, and may be brewed or made into Ale or Beer ; then all Shell-fruits, such as *Hazlenuts*, *Chestnuts*, *Filberts*, and *Walnuts*, might be made into Malt, and brewed ; which would afford a Liquor far exceeding these made from Barley, Wheat, or Oats. For these Fruits abounding more than Grain, with a fine, ready, separable Oil, they would yield a most rich, soft, smooth, balsamick Liquor, both Food and Medicine for slender, lean, hectically disposed Persons ; and the Use of them would be for the improving of
 Grounds,

Grounds, the employing of the Poor, and the Provision of dry Constitutions with a Liquor suitable to their Condition.

4. Hence we know the Reason why Ale, or unhopped Malt Liquors, are so very prejudicial to a slow Circulation, where the Body is cold, weak, tumid, soft, and sluggish; the Mind weak and fearful; the Pulse small and slow; the Colour pale or white; the Veins small and scarce apparent; all from a Watriness and Phlegmatickness of the Humours, and a Laxity and Flaccidity of the Fluids: Where the great Vessels are small and weak, their lateral Vessels large and lax; the projectile Force of the Heart small, the Pulse in the Capillaries of the Brain languid; therefore the arterial Pulsations drive forward the Liquor in the Nerves faintly; the Heart is but poorly supplied with Spirits; its Fibres and Muscles are loose, and act but slowly and weakly: A serous Bile, and small in Quantity, is secreted in the Liver, for want of a brisk Motion of the Blood in the *Vena porta*. In such Persons, the much and frequent Use of Ale softens, relaxes, and weakens the solid Parts more, obstructs the Mouths of the smallest Vessels, fouls the Glands, furs
up

up the Infides of the Capillaries and Lymphaticks with Slime and Viscidity, renders the inactive Body indisposed and corpulent, prepares it for Cachexies, Leucophlegmacies, Dropfies, Coughs, Asthmas, and loads the urinary Passages with Mucus and Slime. The Reason is, because this unhopped and half-fermented Liquor has neither its Oil, Salt, nor Earth sufficiently broken, subtilized, and reduced to a Spirit; and when taken into the Body, its spirituous Parts quickly pass the Secretions, and exhale; its unbroken Oil being in gross Particles, attract one another, soften and relax the Parts, fill the *Sacculi pinguisferi* with Fat, and render the Body corpulent. The Salts of the Liquor are not extricated from the mucous Earth, therefore it gives little Stimulancy to the Fibres. The earthy Parts attract one another, and form a kind of slimy Cement; which being neither fine enough to pass off by Perspiration, nor good enough to become a Part of our Nourishment, and constitute some Part of our Solids; therefore it gets into the small Vessels, where Circulation is slowest, the Strength least, and the Attraction greatest. And these viscid Parts being the lightest of our Fluids,

Fluids, they are still next the Sides of the Vessels in Circulation, where they leave a glewy kind of Cement, which sticks to the Vessels, (especially of the complicated Arteries) and fouls the Glands, causes Poor-ness of Blood, and great Tenacity; which loads the Vessels, produces Stagnations, Ruptures, or Tumours there. Hence Drop-sies, and scrophulous Tumours.

5. From hence we learn, that hopped, throughly fermented, clear, ripe, brown, well-kept Malt Liquors, not too strong, nor too weak, must make a very wholesome and agreeable Drink to such Constitutions, when it is moderately used. For its Oils are broken to a Spirit, its Salts are stripped from their Slime, which sheathed them up; its earthy Parts are mostly settled to the Bottom; the Liquor has re-absorbed all its Spirits from its Fæces; it is become of the Nature of thin, tartarous Wines, and has an agreeable Pungency, dilutes the Viscidity of the Blood, invigorates the Solids, makes them play with greater Vigour and Force, dries the Fibres, makes them shake off redundant Serum, promotes Digestion, Attenuation, Perspiration, and other Secretions. The Solidity of the naked
Salts

Salts gives a Stimulus to the Vessels, and adds a *Momentum* to the Blood, whose Circulation is raised by a moderate Use of this Liquor. And all these Virtues may be more exalted, by impregnating the Liquor with some specifick Vegetables for that Purpose added to the Hops, as Tops of Broom, Lesser Centry, Trefoil, Dandelion and Carduus. Any one of these will be of Service, and help to promote these great and valuable Intentions.

6. We discover how Hops are singularly useful in clearing and keeping of Ale; for they subtilizing, and making it more spirituous, active, and rigid, by separating its cohesive and viscid Parts, they are reduced to a kind of penetrating, volatile Spirit, which exists in smaller Particles, more universally in the Liquor; whereby Attractions are prevented, and their Disposition to render the Beer vapid, acid, or sour, is hindered.

7. Hence we may learn the Reason why soft Ale, with little or no Hops, if not brewed too strong, nor drunk too freely, is so advantageous to such Persons as have a lean strong Body, a large quick Pulse, contracted Vessels, brisk Circulation, thick, sharp,

sharp, and acrid Humours, reddish Complexions, Whites of their Eyes, lacrimal Caruncles, Lips and Mouth all reddish; for the Fibres and Muscles of their Heart are very strong, their Solids firm and vigorous, their Bodies are therefore dry, and their Brain separates from their Blood sufficient Spirits. Hence are they prone to Motion, Action, and Passion. Now this Liquor having its Oil existing in larger Particles and Surfaces, its Attraction will be greater. Hence will it soften, smooth, and relax the Vessels more, diminish their too great Strength, preserve their Tone longer, and their Springs from being too quickly worn out. The Fat-containing Bladders will receive more well-prepared Oil, and have it stored up in them. Hence the Body will look plumper, clearer, and smoother. The Water, wherein swims the Oil of the Grain, will sufficiently dilute the Blood, its Acridness will be corrected from the Softness and Balsamickness of the Liquor; the Salts being wrapt up in the earthy *Mucus*, will give no Pain, Stimulancy, or Uneasiness to the Membranes of the Vessels.

8. Hence also appears what kind of Malt Liquors will agree with such as have small, strong,

strong, and closely compacted Vessels, and thick, tough, and well-mixed Humours, which are not easily altered or changed; whose Bodies are lean and dry, their Colour every where blackish; who are active and diligent, are of a revengeful Temper, and have a penetrating Genius. Such being of a cold and dry Constitution, are called melancholy. The Vessels of their abdominal Viscera, especially of the Liver, Spleen, Mesentery, and Pancreas, are mostly loaded with a thick, stiff, blackish Blood, which requires such Things as attenuate, stimulate, and open, are moistening, cooling, softening, and dissolve without Sharpness. Now it is manifest, that strong and much hopped Ale and Beer, heat and dry, and therefore must be very improper. For though they may elevate the Spirits for a time, and disperse this melancholy Cloud a little while; yet when the accelerated Circulation is over, and the spirituous Parts of the Liquor exhaled from the Body, the viscid being left behind, the Disease must be exasperated from the Increase of the Blood's Thickness and Viscidity, resisting more vigorously the Action of the Vessels, whereby they will be more distended, and
the

the Melancholy increased. But a very suitable and medicinal Malt Liquor may be contrived for this Case, which must be small, clear, ripe, middlingly hopped, and well impregnated with such Things as have a peculiar Activity and Disposition to Motion, and an agreeable Configuration of the Parts, fit to abrade and carry along with them such Particles as they lay hold of in their Passage : Or such Things as consist of subtile Parts, ready to mix with, attenuate, and wear away those mucous and viscid Collections of Humours, which are apt to adhere to, and obstruct the Vessels. And kind Nature has provided us with a great Variety and Plenty; as Wood-Sorrel, Agrimony, Ground-Ivy, Celandine, Doderwood, Groundpine, Horehound, Firtree, Wormwood, Smallage, Spleenwort, Germander, Scurvygrafs, Fumitory, Broom, Liverwort, Water-creffes, Butchers-broom, Vervain, *Paul's-betony*, Ash-leaves, Juniper-berries.

9. This also teaches us how to adapt a Malt Liquor to sanguine Constitutions, which abound with Blood, have soft Flesh, many large blue Veins, have a red Complexion, are chearful, but prone to Anger. All hot and pungent Things are very pre-

judicial to such : But such as are temperate, and promote Secretion and Evacuations, are highly advantageous. Their Blood is in a middle Disposition, between hot and moist ; that is, in the most desirable Temper, and most agreeable to Health and long Life : For as their Solids are not too powerful, so the Patency of all their Vessels keeps them from speedily shutting up, and degenerating into Solids. Therefore since all strong Ale much hopped, must increase the Bodies Heat, and give a Stimulus to the Vessels, its Use must be hurtful ; and as the Solids are inconsiderable, in respect of the Fluids, this Increase in the last, both in Quantity and Viscidity, must put a Stress and Difficulty upon the Vessels, and at length expose the Body to the Mercy of Heats, Inflammations, and inflammatory Fevers, such as Pleurifies, Squinzies, Peripneumonies, &c. The Pungency also of the Liquor, from its Abundance of naked saline Parts, will stimulate the small Vessels, when the more spirituous and fluid Parts are exhaled. Now all Stimulation promotes Contraction ; so that the viscid Parts being got into the small Vessels together with the Fluids, and the last sooner and
more

more easily strained off than the first, they will stay behind, and in time obstruct the Capillaries, and produce long and dangerous Fevers. This Temperament then should be supplied with such Malt Liquors as are small, attenuating, and gently warming, and rather of the *Pale* than the *Brown* Kind, seeing the last abounds with a greater Multitude of naked vegetable Salts, and igneous Particles. Such People should be also careful not to over-dose themselves, since their Fluids have so much the Ascendant over their Solids; for thereby they will be in danger of destroying the Balance of Nature, the Consequence of which will soon be fatal.

10. Hence learn we the Reason why barrelled Ale is preferable to bottled; for such People as have slow Digestion, and weak Bowels, and are thence liable to Indigestions, Belchings, Convulsions, Vomittings, and Surfeits. For the Liquor being drunk, the Spirit and Air wrapt up in its viscid Parts, will dilate and expand themselves, and also rarify Viscidities in the Stomach. Hence Belchings ensue, while the Liquor is in the Stomach; and when got down into the Belly, where it has a longer

Course before it can be got off; and the Bowels being weak in the peristaltick Motion, and the Humours viscid and inactive, the Guts are distended, stretched and pained; and if not eased by proper Discharges, Cholicks and Spasms are produced: For all Liquor bottled up, either during its Fermentation, or before it is ripe, when drunk, begins to ferment a-new in the Bowels, from the Heat and Action of the Parts: And except the Vessels have so much Strength as to resist this Rarefaction, it is easy to account for its producing all these Symptoms which happen in the Body.

11. This teaches us how great the Mistake of such is, who drink fermenting or bottled Ale for a Carminative; for it produces these Explosions only by the Rarefaction of its Contents, and gentle Attenuation of some of its grosser Parts, but strengthens not the Bowels, nor deterges them from those Viscidities, and that *Mucus* which lies between them and the Food digested. But the gross and unattenuated Parts of the Liquor join with the former Slime, and add to its Bulk and Mischief, and in short time will produce these Symptoms

toms in a worse Degree, mentioned in the last Observation.

By attending to such Particulars as are here laid down, we may without much Difficulty satisfy ourselves concerning the Choice and Preference of Malt Liquors, and a suitable Application of them to ourselves: For Wheat affording the most Nourishment of any Grain we have, must yield a more nutritious Liquor than either Barley or Oats; as is evident from the Bodies of such as eat only Wheat-bread, which are commonly plumper than those who feed on Barley or Oat-bread: And Drink made of Wheat or pale Malt, causes Nurses to give much more Milk than brown Ale: For all pale Malt Liquors (other Things being alike) nourish much more than the brown; therefore must Ale from Wheat, and all pale Malt, cause greater Obstructions in the Viscera and Vessels; Straitness of the Breasts, Coughs, Jaundice, and Difficulty of Breathing; and are best adapted to thin, lean, dry, hectic Bodies, whose Perspiration is too large, their Vessels too strong, their Solids over-proportioned to their Fluids. But Ale from brown Malt is more detergent and drying, and therefore well fitted for

corpulent Bodies, lax Solids, and weak Vessels. For which Purpose a fermented Liquor might be extracted from Heath-Pease, better, drier, and more restraining, than any of those before-mentioned.

Malt Liquors compared to Wine, in respect of English Constitutions.

Hitherto I have considered Malt Liquors first in general, then in particular ; now I consider them relatively, or in comparison of Wine : The Competition lies chiefly between these two ; the better and richer sort of People being fond of the latter, and the middling and laborious Part pleading strenuously for the former. Concerning this Matter, the following Remarks may possibly deserve to be considered.

I. The Countries which produce Wines, are of a hotter Climate, which more rarefies the Fluids of their Inhabitants, and relaxes their Solids ; and therefore their Bodies require, and stand in need of a thinner, more separable, and easier digested Liquor, than those produced from Malt, which mostly are used before they be full ripe ; are of more viscid, tenacious, adhesive, and attractive

attractive Parts. Therefore as they seem so agreeable to such Mens Constitutions, Nature has provided them with Wines; the weaker and lower Sorts whereof are chiefly used by the Vulgar ; but the People of Fortune and Figure, drink the strong-bodied Wines, which is the Occasion of their great Liableness to the Gout, Stone, Rheumatism, and inflammatory Fevers. But *Englishmen* enjoying a cooler, and more temperate Climate, their Constitutions are more robust, and they can digest a stronger-bodied Liquor than Wine.

2. Those Countries which have Plenty of Wine, are chiefly obliged to vegetable Food for their Sustenance ; which Sort of Aliment is not only poorer, but generally of more tenacious Parts, as leguminous Fruits, cooling Roots and Herbs, &c. Therefore it requires a Liquor of more easily separable Parts, and that has in it a Mixture of Tartar, which may help to break the Cohesions of these tenacious Viands, by the Solidity of its Parts, and add a *Momentum* to the Blood ; and by its agreeable Austerity, give a gentle Stimulancy to the Solids, that they may put forth a greater Force, and act more vigorously in

resisting the viscid Fluids, break them down, and separate their Parts, so as they may be fitted for Secretion and Evacuation. But as their Meat is viscid, and their Drink otherwise, so the Reverse of this is our Case; for our Drink is viscid, and our Food is not so; so that thus far we are pretty much upon a Level. But as both our Meat and Drink are more nourishing than theirs, it must be granted we are more obnoxious to Plethora's, and the Diseases consequent thereupon. It concerns us therefore to assist Nature by diligent Exercise, and to use Moderation both in our Eatables and Drinkables. If we transgress both these Rules, we shall certainly suffer, and in a short time.

3. Those Countries where Wines abound, are hotter and drier, have less Herbage, and fewer Cattle; for the same Reason have they less Corn, and therefore must depend upon Wine for a Supply of Spirits; which as it is better adapted to their Constitution and Food, so kind Nature hath stored them with it in great Plenty. But our Climate denies us the Production of Wine, and richly supplies us with Corn, for both Meat and Drink: But to proceed,

4. It seems to me an Argument founded in Nature, that Meat and Drink produced by the same Earth where we live, and were born; growing up in the same Air we breathe, warmed by the same Degree of Heat we enjoy, and fed by the same Fluids which nourish our own Bodies, and all which Custom has rendered familiar to our Ancestors and us: I say, it seems to me highly reasonable, that such Meat and Drink should be more agreeable to our Bodies, than any imported foreign Drink, produced in a more sulphurous Earth, and a more rarefied Air and Water. Though I deny not the Friendliness of thin and tartarous Wines to the Studious and Valetudinary. But how small a Quantity of these Wines have we, in Proportion to the great Demands for Wine amongst us?

5. As the *British* Climate produces a more robust and hardy People than hot Countries generally do, so are they more industrious and laborious, and therefore can bear a stronger and more nutritious Diet, which does not so quickly evaporate, but is of longer Duration and Nutrition in hard-wrought Bodies, that can only be supported by a strong Diet. And therefore if

the late Water-writers advise the Use of simple Element, with the Indulgence of a little Wine, to the Inactive, Studious, and Valetudinary, so far they are certainly right. But if they recommend and press Water only upon the Active, Healthy, Strong, and Laborious, exclusively of the Use of Malt Liquors, they are certainly in an Error: For though it be undeniable that the ancient Water-drinkers were healthier and longer-liv'd than their Posterity, that give themselves up to Wine and Malt Liquors only, yet it may justly be supposed, they were less laborious than our Manufacturers and Tradesmen, who continually get their Bread with the Sweat of their Brows. But perhaps the Design of some of these Writers, might not be to bring Men to a total Disuse of Vinous and Malt Liquors, but by setting before them the Dangers and Accidents which follow excessive Drinking, and the Injury of them to some Constitutions, they might at last bring Men to a sober and moderate Use of them; and then they would be not only safe, but highly beneficial to them, when suited to sundry Temperaments, Ways, and Businesses of Life.

6. Another Reason that may incline *Englishmen* to prefer Malt Liquors to Wine is, that in relation to the former, they have the Fidelity of their Friends and Servants to depend upon, that what they drink is what they would have, and expect to receive, without any Fallacy or Cheat. But so general is the Adulteration of Wine become, that it is grown into a Trade, and a Mystery, having a great Variety of Crafts and Secrets. So that it is impossible for the Drinker to know what he swallows, when he drinks common Wine. How nauseous, how improper, how unwholesome, must many of their Compositions be? It is a certain Truth, that Wine-brewers should understand the animal Oeconomy, Chymistry, and natural Philosophy very well, that they may know the Analysis of the Ingredients they add to their Wines, and how these agree, or disagree, with the Juices of a human Body; what Alterations and Effects they have on each Part of the Blood, and how they affect the Secretions and Excretions. For what Nature sends crude, and leaves to the Art of Man to perfect, we know to be good in its Kind; but when sundry kinds of the Species
are

are mixed together, and blended with Earths, Fossils, Sulphurs, and some animal Productions; if this require not as much Judgment to adapt it safely, and wholesomely, to the Use and Nourishment of Men, as the fitting the sundry Judgments of a compound Medicine, by a Physician, to the Constitution of his Patient, I am much mistaken. And what thinking Man will say, that this Medicine, though prescribed with the best Judgment, made up with the greatest Integrity, and its Administration attended with the best Success, shall therefore become a *Panacea*, or universal Remedy?

7. But we can further plead the Preference of Malt Liquors to Wine, in respect of the Generality of this Nation; that Custom has not only made them familiar to them, but the Liquor separated from them, became a constituent Part of their own Bodies, even while in *Embrio* and Infancy: Their Parents having been in part nourished by them, they come to have a Part of them in the Composition of their first Principles of Life, and therefore have generally Reason to look upon them as more natural.

To these Reasons I might add, 1. The Unattainableness of the *French* Wines by ordinary Tradesmen, because of their extravagant Price. And for the *Portugal* and *Spanish* Wines, which are mostly used, such as have indulged the Use of them, would do well to use them as a Cordial, and take them seldomer, and in small Quantities : For though they be much stronger, yet do they oppress the Stomach, and disorder the Head more than the other : For they are but half fermented, their oily Parts are gross, and not half broken ; and this is the Reason of their luscious sweet Taste in Drinking, and of their affording much less Spirit in Distillation. For a through Fermentation volatilizes the Oil and essential Salt, and reduces them into so minute Parts, as to rise in the Form of a Spirit ; for Spirit is only Oil and Salt subtilized. And for this Reason must our own Ale and Beer, if good, be absolutely preferable to thick luscious Wines, seeing they are only half fermented, and ours well fermented. 2. A most wholesome and agreeable Drink may be provided from Malt in all Places, at all Seasons ; whereas Wines can only be made at one time of the Year,

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and in a hot Climate. 3. Though Wine cheer and revive sooner, yet Malt Liquors, especially those from Wheat, more and longer. For Drinkers of Malt Liquors eat less, and yet are fatter and stronger than Wine-drinkers. 4. As *Hippocrates* justly observes, Nature, as in all other Things, delights most in those Foods we are most accustomed to ; and no doubt this Liquor is most grateful, and best accommodated to our Natures, seeing we daily use the Corn of which it is prepared, and other Things made of the same Matter, for our Bread and Food, and because of the Parability of many useful and excellent Things from Ale, at small Cost, both for Food and Medicine.

The Conclusion.

The Result of the whole Matter is, That Men would first distinguish, and then drink. Distinguish, I mean, whether their Constitutions, Circumstances, and Ways of Life, be such as require the Use of Wine, or Malt Liquors ; and if, by the foregoing Rules, they find the latter proper and safe, then distinguish what Sort of Malt Liquors may be most suitable to their Case. If
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they take this Method, nothing but Excess, can hurt them. They need not regard those general and groundless Invectives, which have been thrown about of late. If every Thing was to be decried; that had been at any Time hurtful to Mankind, what could possibly escape? Should any Writer take upon him to inveigh against Water, because it once drowned the World, and has ever since, upon certain Occasions, done a great deal of Mischief; should another disparage fresh Air, as occasioning Colds and Catarrhs in the Tender and Valetudinary; should a third exclaim against Sunshine, upon account of the Damage it does to sore Eyes. What should we think of these Mens Understandings? If they meant any Thing more than Raillery, should we not pronounce them inexcusably absurd, and conclude that they ought not to be trusted with Pen and Ink? No kind of Food or Medicine can be thought of, that has not been rendered highly detrimental by Mismanagement and Misapplication. An unseasonable or immoderate Use, may turn the most innocent Things into the most pernicious, and convert the greatest Blessings into Means of Destruction. Must

we

we therefore spend our Time in inventing Arguments to dissuade the sound Man from the Support of his Life, or deprive the Sick of the Hopes of his Recovery? As reasonable is it to prejudice and prepossess Men against a Liquor that is always highly advantageous to the Strong and Active, and in some Cases beneficial to the Weak and Sickly.

In fine, if any one impute what I have said in Behalf of Malt Liquors, to Partiality, and Prejudice for my own Country, I should not think I had any mighty Reason to be ashamed of the Imputation. But in Truth, I have considered and enquired into this Matter, with all the Indifference of a Foreigner, as believing myself obliged to be more solicitous to promote the Health and Long-life of my Countrymen, than the Honour of our Climate, or the Credit of *British* Liquor. But though that was, and ought to be uppermost in my Intentions, yet it would be an additional Pleasure to me, if, while I was aiming at the former, I should have contributed any thing to the latter.

C H A P.

C H A P. VIII.

Of COLD BATHING.

I Shall briefly consider *Cold Bathing* in common Water, the Theory whereof has been established by *Bellini*, borrowed and improved by *Dr. Wainwright*, transcribed by *Quincy*, and from them taken by *Burton* in his *Non-naturals*. The Practice of it has been revived, with inexpressible Benefit to Mankind, by *Sir John Floyer*, *Dr. Bernard*, and *Dr. Brown*; *Sir John* has abundantly shown and proved the *Antiquity* of medicinal, as well as religious Bathing, and the universal Use of it, by all Nations and Religions, till a Monkish Philosophy prevailed in the Western World, which took away one of the Legs of Physick, viz. *Exercise and Cold Bathing*, and in their room substituted *Incantations, Spells and Charms*, &c. When natural warm Baths came in Use, this Practice was attended with so many *Doubts and Queries*, as clogged and rendered it difficult, whether the Bath at that Time might not be under the malevolent Aspect of some Star? whether it was safe in *Leap-Year*? or at the Appearance

pearance of *Meteors*? or in the Time of Famine or Pestilence? or in a Year when there happened to be several *Earthquakes*? whether some *venomous Effluvia* might not that Year arise from the Earth, and render them noxious? &c. But I shall confine my Inquiries to narrower Bounds, as in what *Diseases* and *Constitutions* Cold Bathing is profitable or hurtful, whether *excessive Rains*, *Great Floods*, *Irruptions of fresh Water*, or lessening of *mineral Principles*, as well for outward as inward Use, or if it be safe to go into an uncovered Bath in stormy Winds; or if the Soil is low and marshy, &c. both which last I think should be avoided, when we can be accommodated with other Waters of the same sort, without these Inconveniencies. But first as to Bathing in common Water, by way of Caveat, I judge it improper on a full Stomach of either Meat or Drink, or both; the same it is after much Exercise, or when the Body is hot; nor is it safe to such as make bloody Urine, or vomit Blood, or have any inward *Impostum*, or have unsound *Viscera*; nor is it adviseable to weak, faint, or feverish People, nor to such whose Necessity obliges them to feed on thin, poor Diet,

Diet ; nor after long Fasting or Abstinence, nor to too thin, naturally lean and meagre Persons, nor during a Fit of the *Gout* or *Cholick*, nor in any Inflammation of the *Lungs* or *Breast*, nor to those labouring under Defluxions or Catarrhs, or in any Case wherein Recovery depends upon easy or free Spitting, nor to too monstruously over-swelling *Hydrôpic*, *Leucophlegmatic*, or *Corpulent* Bodies ; nor are Persons unaccustomed to Bathing, unnecessarily to adventure on it, except from *May* to *September*. But People of strong Constitutions, or that have been accustomed to it, may bathe in the House at any Time of the Year, but *Bathing* should not be begun till the Body is cleansed from gross Excrements or Humours by a Vomit, and a mild Purge or two ; and if there happen to be any Obstructions in the *Uropeia*, these should either be removed, or the Parts relaxed and dilated by an Opiate after Evacuation. For cold Bathing braces and thins the Skin, but hardens the Belly. If the Body is too full of Blood, and the Vessels weak, Bleeding will be proper to prevent any *Hæmorrhage*. These previous Evacuations are more necessary for Bathing, than Drinking ; for in

the last, either the Bulk and Weight of the Water, or its irritating Salts, are apt to move the Belly, clear the first Passages, and encrease Urine; at least the Water drunk, going into the Body, and mixing with the Blood, thins and fits it for the Kidneys, but in Bathing we shall find that the thinner Parts are strained off, with a very inconsiderable Addition made to the thicker.

For the Time we stay in the Cold Bath, it must not be till the Body is chilled and begins to be stiff; half an Hour in River Water in Summer is sufficient, two or three Minutes in a cold Bath, except they have Room to use Exercise. Let the Bather begin at once a Day, if he is of a strong Constitution and can bear it, he may after the first three or four Days, venture twice a Day, Morning and Evening, upon an empty Stomach. And by close Attention to the Effects, it may soon be determined whether cold Bathing will be helpful or hurtful on a fair Trial; for if he continues long chill and cold after he comes out, if his Countenance is paler, his Appetite worse, his Sleep less, or more disturbed; if he is duller, sleepier, drowzier, and unsitter for Business, or Study; if a Numbness, Whiteness,

ness, or want of Feeling or Motion, seize any of the Parts, as Fingers, Toes, Hands or Feet, after several Trials in different Degrees of Coldness, it is Time to desist. I have often observed, that bathing in warm River Water, in the Heat of Summer, has had all these Effects, and yet the Cold Bath has agreed exceeding well, and answered the *Bather's* Expectation. But if the Cold Bath is, or will prove beneficial, these Signs will attend the use of it, 1. The *Bather* feels a pleasant Warmth diffuse itself all over the Surface, after he has dried his Skin. 2. And with that Warmth the Face and all the Body is ruddy and lively. 3. He is much more brisk and chearful. 4. Feels himself lighter, fresher, and nimbler. 5. Has a better Appetite and less Thirst. 6. He sleeps and performs all the Actions of Life, with more Ease and Pleasure.

The Diseases in which cold Bathing has been found most successful, have, after fair Trial, been carefully collected by Sir John Floyer, Dr. Barnard, and the ingenious Mr. John King of Bungey, and they have found it profitable in most Diseases of the Head, as Headach, Lethargy, Palsy, Con-

vulsions, Madness, Bite of a mad Dog, Tremours, Shakings, Numbness, Atrophies, weak Nerves, bad Stamina ; most exquisite Pains, with universal Contractions and Hardness of the Muscles, with pining of the Part ; intolerable wandering, arthritic Pains, with Palsy and Cramps ; fatal Convulsions prevented in Children ; burning Fevers with Convulsions, Ravings, and Delirium ; malignant Fevers, Plague, Fever beginning with Heat and Thirst ; some Kinds of Small-pox. (Though Bathing may have sometimes been found useful in the last five Cases, yet was it used without any Advice, but only by the Patient's Ignorance, or in a raving Fit, and so we would not by any Means recommend it for Imitation ; it can only be called mad Practice, but happened luckily.) Obstinate and chronic Agues, knotty Gout, Siatica, Rheumatic Pains, habitual Thirst, Shortness of Breath, Coughs, Consumptions, scorbutic Pains, fix'd or wandering ; Colds, Speech lost, Deafness, Tooth-ach, Pains of the Muscles of the Neck, with a Distortion of the Back, Sides, or Shoulders, lost Erection of the Penis, Relaxation of the Cremaster Muscles of the Testicles, Abortion and Overflowing of the Menses, to prevent

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Fluor Albus, weak and benumbed Joints, Dropsies, Itch, though the whole Skin be almost covered with Boils; old Gleets, habitual Cholick, with pining and inexpressible Pain, Hemiplegia with Convulsions, swelled Legs, wandering Pains, Worms, Relaxation and Obstructions of the Nerves, Spasms and Wrenches, Hyppo, Hysterics, Rickets, Lameness, even to a Depravation of both Use and Sense of the Parts; to prevent catching frequent Colds, and strengthen the Body; for Stone, Gravel, or Sand, Obstructions in the Liver, Spleen, Sweetbread, Jaundice, Gripes, Excoriations of the Body, Pain and Weakness of the Stomach, Indigestion, want of Appetite, Vomiting, faint or clammy Sweats; inflamed, watery, or bleared Eyes, bleeding at the Nose, Saint Vitus's Dance; with several other Disorders.

Of several hundreds of surprizing unexpected Cures done by the Cold Bath, I shall beg leave to mention only one, which is the Case of Mr. Thomas Baker, junior, of Litton near Tiddes-Well in Derbyshire, who sent it me written with his own Hand in 1716: Being playing at Foot-ball, as he was running, he set his Foot in a hollow Place, which

giving his Body a sudden Shock, he found he had hurt his Left Side under the Short Ribs, at every Step something pricked that Side. In a little Time his Grief spread upwards, and downwards to his Thigh, the Skin being grown dull and almost senseless. Six Years after that, as he was walking over the House Floor, by making such another false Step, the same Pain as above seized him in his Left Breast. He then applied to an ingenious Apothecary, who told him the Case was desperate, for he had broke one of the strongest Nerves which could never be reunited again. Now he was laid wholly aside from Business, and sent for another Practitioner, who ordered him to *Buxton* and *Matlock*, but these did nothing for him. In a Year and a half after he lost his Speech, his Pain being so intolerable, he could not bear moving these Organs, nor could he eat, or move his Head any way, but when set down or laid, was forced to continue immoveable like a Log. His first Doctor being sent for, said he could not possibly live a Week, It being now upwards of two Years since the last Accident, the Spring following he was confined close to Bed, and after twelve Weeks lying, he

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was at all Adventures taken up, then he found his Illness got into his Right Side. When he was taken off Reading, not that he had any Failure of his Sight, but moving his *Eyes* from one Line to another of the Book, his Pain was quite rageous. Now he first perceived somewhat move across his Body in a stiff slow Manner, as if it crept from his Left Armpit to his Right, just under the Skin; and he had a hard Scurff on the *Sternum*, or Breast-bone, so painful, that he could not endure the Touch of a down Feather. In this languishing deplorable Condition, he laid till *Christmas* 1728, that I was sent for. I found him emaciated to a Sceleton, his *Sternum*, but especially the *Pit of the Stomach* was covered with brown, hard, fætid, thick Crust, his *Breath* stunk intolerably, the *Tongue* white, *Belly* exceedingly costive, seldom a Motion to Stool once in a Week; the *Skin* round the *Body* was all numb, except a little Piece on the Right-side of the Back-bone; *Pulse* very little feverish; one could not hear him speak till the Ear was laid to his Mouth, most of his Nourishments was Liquids suck'd through a Quill as he laid on his Back. The Motion round

his Body was like Liquor struggling for a Vent, moving from his Left-side to his Right. Before he was confined to Bed, when he sat still without the least Motion, he would often show his Wife and Relations the Skin of his Body move from left to right. If he walked, or used any Motion more than ordinary, this Symptom would cease, but it returned again with greater Violence after. Comparing the whole *Symptoms* and *Duration* of the Disease together, they seemed to be the Effect of an *Alcaline Acrimony*. The Use of Glysters was wholly impracticable, therefore I ordered very gentle, cooling, diluting Lenitives, a little acidulated; a most emollient Anodyne Fomentation to the Breast, with a Liniment to the same Purpose after it, a Decoction of the Woods acidulated for common Drink. Three Weeks after I visited him again, but could perceive no sensible Advantage from that Method. I then prescribed a strong Liniment of *Ung. Dialth.* with *Ol. Vitriol.* outwardly, and *Spt. Vitriol.* given in Water inwardly, and all his Food highly acidulated. In few Days he found Relief from this, was able to read, speak softly, move

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his Head and Jaws, get out of Bed, and walk over his House twenty times in a Day, This Method he used eight Weeks, during which time he never put off a Shirt to put it on again, for all the Breast and Bosom was eaten out and gone; as this Scurf loosened the Pain abated. At the latter End of *May* he tried to ride out, and during the Motion of the Horse the Pain was easiest, but returned again the Instant he stood still. In *June* he was carried two little Miles off, to an intensely cold Brook of charming bright Water called *Cressbrook*; here he was bathed daily for three Weeks, and found much Service by it, though not without frequent Relapses of Pain. He desisted bathing some time, till I heard of it; I ordered him daily to it, which he did all Summer, and every other Day all Winter, except when Frost and Snow hindered him, then he bathed in a Well at home. In *February* he went to *Matlock*, but got no Benefit at all there. When he went in and came out, he found his Skin all over full of hard Knots, but bathing in *Bright-pool Cressbrook* took away these Knots, which returned not again for twenty four Hours after. After a Month's Stay at *Matlock*,

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he returned to his own Cold Bath (whose Degree of Cold see in the Table) as Spring came on he still grew better, now could speak aloud. Three Weeks after *Midsummer* he began to work at his Trade (a Stocking Weaver) he kept Bathing all that Summer and next Winter, but turned negligent the Summer after, *viz.* in 1731, on which he had a small Relapse, but was soon carried off by the Cold Bath. This Course he continued next Winter and Summer, followed his Business carefully, and was able to provide well for his Family. Every Summer before he bathed he used to sweat excessively, but chiefly the Breast poured out a clammy Sweat like Oil; but instead of that, after the Cold Bath, he had only a kindly natural Heat. The first Winter he bathed, when he rubbed his Skin to dry it, there always came off a thin Scurf or Fleece all over the Body. He has now continued well for several Years.

But how these wonderful, and some of them seemingly contradictory Cures, are brought about by cold Bathing, we find sufficiently accounted for by the above Authors, who supposing the Body's whole

Surface equal to fifteen Feet, which begin immersed two Foot under Water, sustains a Weight added to that of the Air, equal to 2280 lb. whose Effects will be, 1. A greater Pressure upon the Body, whose Surface is first and most compressed, and its Centre least and last. 2. Stimulation and Contraction of the Solids from its Coldness, infer, 1. Since the Pressure of the Water added to that of the Air, is so great on the Surface of the Body, and the least on the Centre and Viscera, the Blood Vessels on the Outside of the Body being compressed by the Weight, and contracted by the Cold, the Blood will be thrown upon the Viscera, where there is no Increase of Resistance; the Effect of which will be, to attenuate, break, and dissolve the stagnant Humours, by straitening, compressing, and squeezing the Vessels, whereby Motion will be restored to such as had lost it, make it brisker and freer to such as had it. 2. Hereby all the glandular Secretions will be enlarged, Bile, Urine, Perspiration, &c. 3. From the Increase of Secretion, and Bracing of the Solids, the Body will feel lighter and warmer. 4. From this increased Pressure on the Body, the distended Lymphatics

Lymphatics will return their *Lympha* in a larger Quantity, and in less given Time to the Kidneys, to be filtered and strained off by Urine, in that Swelling over all the Surface of the Body called *Anasarca*; and likewise in that Dropsy of the Belly called *Ascites*, that Lymph or Serum which is spued out of the Mouths of the broken Lymphatics into the Cavity of the Belly, which in the Bath being more compressed, the Lymph must be forcibly driven into its absorbent Vessels; which though Anatomists have not discovered, yet from sundry Observations, we are satisfied of their Existence, as from the continual Steam that rises from all the Bowels of the Breast and Belly, which would soon distend them, were there no such Vessels to receive it; and also from the sudden and wonderful Relief People in the like Case have found from cold Bathing; therefore a Collection of Water in the Belly, seems to be not so much for want of those Vessels, as either from their Flaccidity, or the stagnant Waters Viscidity. 5. The Coldness of the Water is one Cause of its Effects; for it is certain that all Cold contracts, which Contraction will be in Proportion, 1. To the Degree

Degree of Coldness; hence the coldest Water is found the most efficacious in a great many stubborn Cases. 2. The Suddenness of the Application of the Cold to the Body; hence jumping in all at once, gives a greater Contraction, than going in leisurely, or by piece-meal. By this sudden Immersion, the Contraction is instantly propagated through the whole System, whereby the Humours are propelled with greater Force through the Vessels, the Fibres and Vessels being at the same Time more tense and strong, will act with greater Force, driving forward their Contents with a quicker Motion, and break them more powerfully and irresistibly. 6. When the Mercury stands highest in the Barometer, our Body (supposing its Area to be fifteen Feet) sustains a Pressure of the Air equal to 39900 lb. Weight, and when the Mercury falls lowest, the Weight of Air on the Body's Surface, exceeds not 36000 lb. Weight, then the Odds is near 4000 lb. enough to make a very great Difference and sensible Alteration, in the Circulation of the animal Juices on the Body's Surface. 7. Since a Body immersed two Foot deep in common Water, sustains a Weight equal to 2280 lb. added

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to that of the Air; then when the Mercury is at 28 or a little lower, the same Body immerfed three Foot and an half deep in common Water, fustains only a Weight very near equal to that of the Air, when the Mercury ftands at 31ft or higheft in the Barometer. Hence appears the Ufe-fulnefs of the Cold Bath in moist, wet, foggy, heavy, cloudy Weather, when the Mercury is very low, to brace the Body, forward Perfpiration and the animal Secretions, efppecially of nervous Juice to cheer, enliven, and rouze the Body. 2. From this Diminution of the Prefsure by the Atmosphere it is, that in rainy, foggy, or mifling Weather, we find ourfelves fo dull, fleepy, and inactive, the Mind alfo confufed, flow, and cloudy, our moft intense Thoughts are often fhallow and inconnected; all which may be prefently difperfed by cold Bathing, for Reafons above.

Since there is fo great a Difference of the Prefsure of the Air at fundry Times, viz. 4000lb. Weight, or near a 10th Part, the Effects of it on tender Bodies muft be very fenfible, for when the Barometer is at loweft, from this Diminution of Compref-
 fion, the Veffels on the Surface and Ex-
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streams of their Bodies, which have received any Hurt and Distention, and either cannot, or have not recovered their Tone, will be distended afresh; hence some Feelings or Grudgings of the old Complaint. If such would live comfortably, they should not at such Times, and under such Circumstances, neglect the Use of the Cold Bath, to compensate the Weight of Pressure in the Air, and Contraction of the Vessels, and Propulsions of the Fluids to the Body's Centre. On the contrary, when the Mercury stands highest, and the Body most compress'd; or when the Body and Vessels are fullest of Blood. In the first Case a great Quantity of the Blood will lie in the *Viscera*, therefore such as have weak, too much dilated, or obstructed Vessels, the Disorders will be felt more inward, and the Cold Bath is then highly improper. Again, where the Variation of the Mercury is least, there will happen the fewest of these Complaints on any Change of Weather; as near the Equator where it varies little; and eighty Degrees or above from the Equator, the Barometer varies not above half an Inch. Heat, or very hot, clear, or sultry Weather in Summer, has near the
same

same Effect on our Bodies, as moist, foggy, or rainy Weather, even though the Mercury stands pretty high in the Glass, for Heat relaxes the Solids of the whole System; the animal juices are rarified, the Body is dull, lazy, sluggish, and covered with fainty Sweats, the Mind slow, Appetite and Digestion low; the Spring of the Vessels is relaxed, the Capillaries, near the Body's Surface especially, are distended; here cold Bathing afford the best, sure, and most immediate Relief, not only to restore these profuse clammy Sweats, but to prevent slow and inflammatory Fevers; for which, and some former Reasons, the Use of the cold Bath must always be of great Service when the Mercury stands low in the Barometer; *i. e.* when the Compression on the Body's Surface is least; that what Compression or Contraction is wanting, either from the Heat or Levity of the Atmosphere, may be compensated by the refreshing Immersion in the Cold Bath in the Morning.

For the same Reason such Bathing will be highly necessary for Persons pining under chronic Grief, Fear, Sorrow, &c. which slacken the Tone of the Fibres, and prepare
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the Way for a Multitude of Diseases arising thence. On the same Account we recommend it to flegmatic Temperaments, who are dull and slow both in their Action and Intellect, Pulse slow, Heat low, from a Laxness of their Fibres, and a Redundance of Serum in their Juices. Melancholics, Hypochondriacs, and hysteric People, will always find much Service from the outward Pressure of the Water, which throws the Blood upon the *Viscera*, and gradually destroys its Lensor, mixes its Parts, restores its Motion, quickens its Circulation, prepares it for, and brings it to the secretory Glands, there to have its useless and hurtful Parts strained off, and sent out of the Body. The same Reason will hold good and warrant its Use to Cacochemics and Cachectics. This Reasoning is so obvious, that it wants no Explanation, nor needs Words, to advise the Use of the Cold Bath to the Inhabitants of low, boggy, marshy, fenny Grounds, who are so liable to consumptive, aguish, and scorbutic Disorders, whether they arise from the great Quantity of Water always floating in the Air, or to the stagnant putrified State of their Waters, or, (as some will) to the sulphureous and

saline Particles hovering in that Atmosphere.

Coroll. 1. Since the Cold Bath acts by a *Pressure* added to that of the Air, which Pressure is one of the Properties by which it is of so much Service to our Bodies, then the deeper the Immersion, the greater the Pressure, and the greater is the Profit reap'd by it. But since a Body dipp'd three Foot and an half under Water, when the Mercury stands at or a little below 28, sustains only a Pressure equal to that of the Atmosphere when the Mercury stands at 31. Then diseased Persons, which expect Relief from this Weight of the Water, should dive deeper as the Mercury falls in the Tube.

Coroll. 2. Since the *Pressure* of the Water is of so great Use, *bathing in the Sea*, is more useful than bathing in common Water; for by letting the Person down out of a Boat, he may be immersed six, eight, or ten Foot deep; that is, he may be made to sustain a Weight of Water added to that of the Air, from 6840lb. to 12003 lb. Weight, or still more if wanted; then we must not forget that the Salt in this Vehicle, as we have found it, even in

a rainy Season, is to the Water as 1 to 22 ; so the Weight, and consequently the Pressure, will be encreased proportionably ; for a Body thus immersed 10 Foot under Sea-water, sustains near 520lb. more Weight than in common Water. There we see in an *Ascites* or *Tympanites* with sound Bowels, where the *Serum* is got out of the Vessels, and lies in the Cavity of the Body, and cold Bathing is used for its Expulsion, the deeper the Immersion with Safety to the Patient, the more effectual and expeditious must its Effects and Benefit be ; for the greater Weight is laid on the Body, the more forcibly will the extravasated *Serum* be impelled or driven into the Mouths of the *absorbent Vessels*. On the contrary, in an *Anasarca*, where the Lymphatics over the whole Surface are distended, but not broke, the Cold Bath well managed, will be of special Service ; but then they must be dipp'd more gradually , as the first Day go only one Foot under Water, two Foot next two Days, then three Foot, &c, for should they venture in too deep at first, it may be of dangerous or fatal Consequence, by putting a greater Pressure and Contraction on the *Body's* Surface, than

the weak distended Capillaries can ordinarily bear, without either stretching them beyond their Tone, or breaking some of them, and causing them to discharge their Contents either under the Skin or among the Muscles. This Pressure and Contraction in Bathing, together with Exercise, promises the surest and best Relief to such as have been long accustomed to Opiates, the Effects whereof is great Relaxation of the Solids, as is plain from their Countenance and Actions; but this sudden, and for some Days repeated Contraction, together with Riding, will invigorate and brace up the flagg'd Solids. The same Reasons recommend cold Bathing to studious, idle, sedentary, inactive Persons, to brace up these Fibres which are let down either by Sluggishness and Inactivity, or by depriving them of a due Supply of animal Spirits, by spending them on the intellectual Organ.

On the contrary, since the Pressure and Contraction are so considerable, such as have a very weak Pulse, are either to avoid cold Bathing, or use it of a small Depth, and not intensely cold; for the Contraction and Dilatation of the Pulse keeps Pace with
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that of the Heart, where one is weak, ſo is the other ; and the Blood being forcibly driven from the Circumference thrown upon the *Viſcera*, and by the *Vena Cava* caſt into the right Auricle of the Heart, which being weaker than the Ventricle, it may be ſo diſtended, and receive ſuch Reſiſtance from the Blood behind, as may diſturb or weaken its Motion, or hinder its full and regular Projection into the Lungs : Hence Faintings, polypous Concretions in the Heart or great Veſſels. On this Account cold Bathing is alſo unadviſable to ſuch as have weak Lungs, have ſeveral times vomited or ſpit Blood, have always a ſmall, ſqueaking, effeminate Voice, for they breath the Air out of their Lungs ſlowly, which in the mean time rarifying in the Air Veſſels, diſtends them, preſſes too powerfully on the Blood Veſſels, whereby they are in danger of burſting, and either diſcharge their Contents into the Cavity of the Breſt, into ſome of the Membranes of the Lungs, or by the Mouth.— But ſince the Water acts both by Preſſure and Contraction, which expel the Blood from the Body's Circumference, then is Bathing unadviſeable in old Age, where

the Solids encreasing and stiffening, become an Over-match, and too powerfully resist the Fluids, whereby the small Vessels collapse and grow up, this gives a greater Opportunity to these on the Surface to coalesce, become impervious, and stiffen more and sooner.

It is from this superior Pressure and Contraction, that bathing in the Sea produces such surprising Effects in preventing that Madness called *Hydrophobia*, from the Bite of a mad Dog; to the Prevention of which it is necessary, 1. That the Person bathe immediately after the Bite, before any of the Symptoms begin in the least to appear. 2. That he bathe several times. 3. That he continue as long under Water at each Immersion as he can, for fear of Suffocation. 4. That each time he be let down to a considerable Depth. 5. That at each Bathing he be taken up and plunged down, at least six or seven times, and that very quickly. 6. That his Diet after be moderate, cooling, and of easy Digestion. It is past Contradiction, that Sea Bathing often, yea mostly prevents this Madness, when speedily and regularly used. Let us reflect a little on this; and 1. We have often said
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we know of no Designs that can be answered by this Bathing, besides Pressure and Contraction, which are so unlike to drive the Poison outward, that they drive it inwards, together with the *Blood* and *Lymph*, from the sudden and strong Compression of the Body's Surface, squeezing and expelling the Blood out of its Capillaries, and throwing it in greater Surges upon the Centre. 2. Since driving the Blood inwardly by Bathing, prevents this fearful and fatal Disease, it naturally and necessarily follows, that the immediate Cause of it, is a Repletion, Distention, and Inflammation of the Blood Vessels, of some Part in or near the Body's Surface. 3. And Observation assures us, that it happens in the Mouth, Throat, Gullet, and upper Orifice of the Stomach, in these very Parts, from which the *Saliva* of the mad Animal was filtered off; hence this Distemper always falls on these Parts of our Bodies, from which the Venom in the mad Dog was discharged. 4. It is also plain that this Poison is to our Blood as a Menstruum to Liquors to be fermented; it rarifies, swells, and increases their Bulk, as though there was a great Addition made to their Quantity, therefore

a Distention and Inflammation must appear somewhere : For that it is an Inflammation, is manifest from its being attended with a *Fever, Thirst, Delirium, Dry, White, or Brown Tongue*, and other like Symptoms.

5. That this *Virus* is of a very diffusive contagious Nature, therefore most likely to be a *Venine, Alcaline, Volatile Salt*. That it is of a poisonous Nature, is too visibly seen and felt from its Effects: That it is *alcaline*, appears from the Heat, Fever, and Thirst ; that it is *contagious*, is known from its speedy Communication from one Animal to another, by Touch, Depression with the Teeth, without a Wound or *Saliva* falling on the very Cloaths, that it is diffusive is evident from its speedily affecting and turning all the animal Fluids to its own Nature ; that it is a Salt, and an alkaline Salt, is also plain from its producing the like Effects with that sort of Salts, as *Heat, Thirst, and parching the Bodies*.

6. Their being afraid of Drinkables, is from their Inability to swallow, because of the Inflammation of the Parts, which at last is communicated to the Wind-pipe ; hence that shrill Noise wherewith they breathe.

7. From all which taken together, we see
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how the Pressure and Contraction of the Bath prevents the Disease, by bracing up the Solids and Vessels, promoting and encreasing the urinary Discharge and Perspiration, whereby these *alkaline volatile Salts* are expelled the Body, the Blood's Rarefaction is prevented, and all Stagnation obviated; the adhering of any Lentor or saline Matter either on the Outside of the Body, in the excretory Ducts in the Skin, or on the Insides of the Vessels, rendered impossible; Circulation, Secretion, and Evacuations, are fully and regularly carried on. Since cold Bathing is so effectual in preventing the most fatal and tragical Inflammation, irresistible by all other known Means, may not this give Encouragement to bring this Practice more in Request, during the Reign of epidemic external Inflammations chiefly, as Quinsey, &c. to strengthen the Body, and expel the Humours by Perspiration and Urine? But though it may be serviceable in preventing such Inflammations, yet may it be as dangerous after any large Inflammation has seized, especially where it is near or upon any of the Ventricles; for supposing either many Vessels too much upon the Stretch, or their contained

Liquid either too viscid or globular to be returned, then from the sudden Propulsion of the Blood from the Circumference to the Centre, some of these Vessels may either be broke, or so dilated, as they may for ever lose their Spring. I have known some habitual slight Quinzies soon cured, by washing the Part in cold Water, and laying over it a thick folded Linnen Cloth dipt in Water.

Since cold Bathing throws the Blood, especially that in the Capillaries, on the Body's Surface, so forcibly inwards, then in Spring and Harvest, this seems a promising Course to prevent Spring and Summer Fevers, or autumnal Agues and Intermittings; the first being often fatal to young People of a full Habit of Body, especially Bibbers, the last are often epidemic and chronic. Nor can I think of a more certain Preventative of slow Fevers, whose immediate Cause we imagine to be Obstructions in the small Vessels. *Coroll.* As the Pressure of the Bath depends on the Depth of Water we are immersed in, so the contractile Force with which it acts on our Body, is in Proportion to its Coldness, which may be easily determined by the
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Thermometer, and consequently how much greater Contraction one Water will make on our Bodies beyond another ; on which Account, we hope, a Table of the fundry Degrees of Cold in several Baths, taken by the same Glass, cannot be unacceptable to the Reader, as it has never been done before. It is from this contractile Force impressed by the Cold on our Bodies, that Bathing is of special Use in several excessive Evacuations, as *Fluor Albus*, faint clammy Sweats, *Menses immodici*, Faintness and Lowness of Spirits, *Hippo*, Stupor, Weakness or Laxness of the Nerves, Lameness, Pains of the Stomach, and Want of Appetite, Scorbatic fixed, Erratic, Rheumatic and Arthritic Pains, loose, soft, painless, White Swellings, Deafness, Loss of Speech, Atrophies, Lethargy, Lax Stamina, old Gleets, obstinate Agues (if the Blood is not too fizy, for then they are often fatal) Erection of the Penis diminished and lost, Cremaster Muscles relaxed, Abortion, &c. The Cause of this Contraction, is either from the Sensation and Stimulation of Cold upon the Body, or the Compression of the Air in our Solids and Fluids ; as the Air in Spirit of Wine contracts by the Increase of Cold.

Cold. This Compression or Contraction of the Air is twofold, 1. From the Pressure of the Water ; for though the Air be compressible, yet Water is not. 2. From the Cold, which instantly reduces the Air in the Blood to less Space ; but to how much less, the Spirits in the *Thermometer* show us with Certainty. But we have no exact Method to measure the certain Degree of *Stimulus* impressed on the Solids.

Having so far seen the visible and demonstrable Effects of the Cold Bath, we may in some measure be able to comprehend the Reason of it, for the reverend and ingenious Mr. *Hales* (*Statics*, Vol. I. p. 299, 300) has proved that Air exists in a much larger Proportion in the Solids of either Animals or Vegetables, than in their Fluids. And 1. Since upon the Compression of this expanded Air, the constituent Parts of the elastic flexible Solids are brought nearer to one another, so much larger is their Point of Contact, their Cohesion is stronger, and they act with greater Force. On the contrary, the more extended a Fibre or Vessel is ; the smaller its Point of Contact, the nearer are its Parts to Separation, or Loss of Continuity; and the

the weaker or more painful it is. 2. Suppose the Air be useful as one of the Principles of Union, it cannot act so strongly whilst so greatly dilated and expanded; therefore the nearer its Particles are brought together, the more strongly will they cohere: But whether the animal Oil or Air, or both, be the cementing Principle, we are sure Oil abounds much with Air; this is one of the Ways by which the Cold Bath braces and strengthens the Solids, as well as abates the Rarefaction, and diminishes the Bulk of the Fluids. Here we might add what was already hinted, *viz.* 1. That since the Contraction from the Bath is so sudden and great, this forbids its Use to over-bulky, corpulent Bodies, whose Fibres are so choaked up and lubricated with Oil, that either they have not room to contract, or are too much dilated, so as they cannot shake off, nor expel superfluous and hurtful Humours, but by these sudden Jirks can only have their Spring weakened to no purpose. But such as are disposed to Corpulency, yet not arrived at this monstrous bulky Habit, we cannot devise or recommend a more sure, safe, and certain Preventative, than cold Bathing. 2 This sudden

den Contraction and great Pressure, forbids also the Cold Bath to Persons very hot, because the sudden Jirk of the relaxed Vessels, in propelling and expelling their rarified Fluids to the Centre, the Diameters of the Vessels will be suddenly shortened, and the divided Globules of Blood will again run together, and in larger Masses, than the contracted capillary Vessels (which are conic) can possibly admit of, or let pass; but they must stop, and not only *they*, but all the Globules behind, in the same Branch from the Cone to the last Division, whose more thin and serous Juices, will, by the Action of the surrounding Parts, be driven on, but the more globular and gross will stop; hence are Obstructions producing an Inflammation. But where the Blood is most rarified, the Vessels weakest, the protrusive Force least, and the Contraction strongest, and consequently where the Inflammation will happen, is impossible to foretell; hence may it be more or less dangerous, according to the Usefulness of the Place where it fixes, the Degree of the Body's Heat, Blood's Rarefaction, and Contraction of the Solids.—The same instantaneous Contraction and Pressure is also

dangerous, when the Stomach is full; for the Vessels being then distended with Juices, though the Blood be carried up in a perpetual and now large Stream to the Head, along the bony Case of the *Vertebræ* of the Neck, by the *Carotid Artery*, where the Pressure of the Water cannot touch, yet it descends by the jugular and other Veins of the Neck, without this Case, where the Weight and Coldness of the Water acts most powerfully, any may lessen the descending Quantity, whereby some of the small Vessels of the Brain may be overstretched and broken, and bring immediate Death. 2. Or the Blood being thrown by too full a Stream into the right Ventricle of the Heart, and thence into the Lungs, may stretch some of the small Vessels beyond their Tone, causing *Pleurisies*, *Peripneumonies*, *Asthmas*, &c. Or the *Auricle* or *Ventricle* of the Heart itself, may be stretched beyond the sudden Recovery of the Spring of their Fibres; hence sudden Death; or too great a Quantity of Blood, may be suddenly thrown into the Vessels of the Stomach, Liver, or other *Viscera*; hence *Inflammations*, *Fevers*, &c. The same Causes forbid Bathing, especially in the

the Sea, to People of unsound Bowels, or any inward Part being weaker, or its Vessels more distended, worn, or corroded, than the rest; and to such as have *Vomitas*, *Impostumes*, or large Collections of Matter not extravasated, for the Pressure will throw the Fluids more plentifully and forcibly on that Part which gives the least Resistance; hence a Breach, or irrecoverable Distention of some of its Vessels. But where either these, or Hæmorrhages from the Breast, Stomach, or Lungs, forbid cold Bathing, I cannot enough extol the Use of Bitters, as the alone *Succedæneum*.

A Table of the sundry Temperatures of several Baths and Springs.

<i>Baths.</i>	<i>Temper.</i>
<i>Holt Bath,</i>	90
<i>King's Bath,</i>	87
Heat of a young Man's Body in a high Fever,	} 80
The same recovered, and in Health and Rest,	} 67
<i>Buxton Bath</i>	59
<i>St. Ann's Well,</i>	58
<i>Bingham Well,</i>	53
	<i>Bingham</i>

<i>Baths.</i>	<i>Temper.</i>
<i>Bingham Well,</i>	56
<i>Bristol,</i>	52 <i>b.</i>
<i>Matlock Bath</i>	45
<i>ditto.</i>	46
<i>Ditto Stable Water,</i>	44
<i>Stony Middleton,</i>	40
<i>Middleton Bath,</i>	40
<i>Wirksworth,</i>	39 <i>b.</i>
<i>ditto.</i>	40
<i>Stony Middleton,</i>	41
<i>Bakewell,</i>	37
<i>St. Winifred's, or Holy Well,</i>	32 <i>b.</i>
<i>Ganesburg,</i>	31
<i>Kirbythore Bath,</i>	31
<i>Cheltenham Spaw,</i>	31
<i>Malvern Dogwell,</i>	31
<i>Stone Bath,</i>	30 $\frac{1}{2}$
<i>Harrigate Bath,</i>	30 <i>b.</i>
<i>Mosslake Bath,</i>	30
<i>Acworth Bath,</i>	30
<i>St. Mary Wellington,</i>	30
<i>Newnham Regis,</i>	30
<i>Wynn by Newport,</i>	29 <i>b.</i>
<i>Liquoris Green,</i>	29
<i>Bradforth Lady Well,</i>	29
<i>Gipton by Leeds,</i>	29
<i>Barnsley Bath,</i>	29

<i>Baths.</i>	<i>Temper.</i>
<i>Lincoln Bath,</i>	29
<i>Litchfield Bath,</i>	29
<i>Malvern Holy Well,</i>	29
<i>Air on the Top of Crossfell,</i>	29
<i>Sun-shine in a clear Frost,</i>	29
<i>Nottingham Bath,</i>	28 <i>h.</i>
<i>Scargill Sheffield,</i>	28
<i>St. Katherine Doncaster,</i>	28
<i>St. Mongo's Cockgreave,</i>	28
<i>Childwell,</i>	28
<i>Preston, Lancashire,</i>	28
<i>Manchester old Bath,</i>	28
<i>Burleigh, Sheffield,</i>	28
<i>Old Parkwel Whisper,</i>	28
<i>Wakefield Bath,</i>	28
<i>Crofts Darlington,</i>	28
<i>Hartlepool Spaw,</i>	28
<i>Durham Bath,</i>	28
<i>Ditto Sulphur Well,</i>	28
<i>Codsallwood Sulphur Well,</i>	28
<i>Astrop Wells,</i>	28
<i>Cartmal Well</i>	28
<i>Carlsile Chalybeate</i>	28
<i>Kirbythore Bath Spring</i>	28
<i>Woodstock Park Bath</i>	28
<i>Willowbridge Bath</i>	28
<i>Fosforth, York,</i>	28
<i>Chester Bath,</i>	27 <i>h.</i>
	<i>Ormskirk</i>

<i>Baths.</i>	<i>Temper.</i>
<i>Ormskirk Bath,</i>	27 <i>b.</i>
<i>Manchester N. Bath,</i>	27 <i>b.</i>
<i>Rippon Bath,</i>	27 $\frac{3}{5}$
<i>Barnsley Bath Spring,</i>	27 $\frac{1}{2}$
<i>Wardrew Spring,</i>	27 $\frac{3}{4}$
<i>St. Nicholas's Thorp,</i>	27 $\frac{4}{8}$
<i>Harrigate Bath Spring,</i>	27
<i>Ichley Bath,</i>	27
<i>Settle Bath,</i>	27
<i>Acworth Bath Spring,</i>	26 $\frac{1}{2}$
<i>Ichley Bath Spring,</i>	26
<i>Brightpool Bath,</i>	26
<i>Padgham-Heights Bath,</i>	26
<i>Crossfell Chalybeate,</i>	26
<i>Ashover Bath,</i>	26 $\frac{1}{2}$
<i>Freezing Point,</i>	18
<i>River Water in a Frost,</i>	21
<i>Hardest Frost of 1738,</i>	13
<i>Snow and Salt mix'd,</i>	0
<i>Three perennial Springs tried in } Frost and July,</i>	29

As all Baths resorted to and used for the Recovery or Preservation of Health, are either hot, warm, tepid, cold, or very cold; and are relaxing, diluting, anodyne, stimulating, compressing, or contracting, which

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require

require Waters of different Temperatures; but this true Difference, as has been said above, having never been exactly observed and taken by any one Hand and *Thermometer* before, we imagined that this Table could neither be disagreeable nor useless; for 1. We see hereby how delusory and uncertain their Sensation of feeling it, who will have *St. Winifred's* Well to be the coldest Bath in *England* or *Wales*, *St. Mongo's* at *Cockgreave* next, and *St. Katherine's* of *Doncaster* next, &c. when in reality there are several Cold Baths above two Degrees colder than the last two, and six Degrees colder than the first, which is near a Medium between the freezing Point and *St. Wenifred's*. 2. This determines the Strife among such as are differently extolling each their own Baths as the coldest and best, when, in truth, neither coldest nor mildest may be most suitable in several Disorders, but the main Stress or Dependence may be upon some Minerals which must impregnate the Water to make it more healing, as in the *Leprosy*, *Scurvy*, *King's-Evil*, *Ulcers*, &c. 3. As there is a Variety of Disorders which call for cold Bathing, so of Constitutions, Ages, and different Ways
of

of Life, which necessarily demand different Temperatures of the Waters used for Immersions ; thus Males, Youth, Middle Age, robust, rustic, laborious People, and Inhabitants of cold mountainous Places, can bear a colder Bath than Children ; Females, old People, and such as are accustomed to a warmer Situation, easy and delicate Course of living ; for to such the Degrees of 28, 29, or 30, will be cold enough, a few Cases excepted. 4. When we cannot dispense with the Want of the coldest Baths, we must not in the last Cases venture on them first, but begin with the milder, for some time, as 29 or 30 ; then when the Body has been a little inured to these, descend to 26 or 27 to finish the Cure. 5. In old obstinate Pains, whether more remiss or acute, the coldest Baths will perform a Cure both more effectually and expeditiously than the milder ; or in great Relaxations, or where the Disease lies deep, as in the Sciatica, &c. 6. It is necessary to know the exact Temperature of the Bath, in order to determine the Time that the Bathers should stay in it. When the Case requires the greatest Contraction only, that Stay must be very short.

In the general, the colder the Bath, the less Time must we stay in it, and we ought to begin and leave off with the shortest Time and shallowest Immersion in it, that both Pressure and Contraction may be gradually increased and decreased. As to the Time, from two to six or seven Minutes is sufficient in a very cold Bath; but this must be adapted to the Constitution. As to Depth, from one Foot to five is enough, for if too deep, the Pressure may be too great and sudden, and throw the Blood in too great and quick Surges upon the *Viscera* of the Head, Breast, and Belly, and endanger the Breach of some of the Vessels, especially if either weak or distended before. If too shallow, there is not Weight enough of Water, the Repulsion of Blood from the Circumference to the Centre, will not be powerful enough to answer the Design, Expectation, and Necessity of the Bathers; for whether the Pressure of Water on the Body's Surface be equal to 34000, or near 40000 lb. Weight, either of them will not allow of an additional Pressure or Contraction from cold Water, to such whose Vessels are full of fiery saline Blood, from immoderately swallowing down hot, strong,

strong, and inflammatory Liquors; such Experiments have proved fatal to many, as also to those whose Stomachs being distended, press upon the descending Trunk of the *Aorta*, and force too great a Quantity of Blood to the Head. For the same Reason the *Colon* and *Rectum* should be emptied, or kept easy, lest they pressing on the Iliac Arteries, may produce the like Effect; therefore very costive Persons, or such as have very indurated Excrements lodged in these Intestines, must have them discharged before Bathing. All Bathers should be sure to go in over-head pretty deep, or they may expect a Swimming or Pain of the Head, from its Vessels having too great a Load thrown on them, when the rest were compress'd and contracted. Deafness succeeding Bathing, is from a Relaxation of the Drum of the Ear, and may be prevented by putting the Fingers into the Ears, or Wool moistened with a little Oil. Continuing too long in the Cold Bath, often occasions Cramp, Horrors, Fevers, Looseness, &c. For whenever the Sensation of Cold becomes severe, we should get out. Experience proves it beyond Contradiction, that cold Bathing, Temperance,

and moderate Exercise, are the best Antidotes against hereditary *Scurvy*, *Stone*, *Convulsions*, *Consumption*, *Melancholy*, *Hyppo*, *Rheumatism*, *Scurff*, *Leprosy*, *Stupidity of Mind*, *Weakness of the Limbs*, *Pains on Change of Weather*, *Cough*, *Vomitings*, *Palsy*, *King's-Evil*, *Lethargy*, *Want of Sleep*: But then in several of these it should be joined with Water-drinking for common Tipple. It is worth Observation, that Water-drinkers are temperate in their Actions, prudent, and think more connectedly, are seldom afflicted with the following Diseases, *Apoplexy*, *Palsy*, *Headach*, *Blindness*, *Gout*, *Stone*, *Convulsions*, *Trembling*, *Madness*, *Hiccup*, *Indigestion*, *habitual Thirst*, *Burning Heats*, *Asthma*, &c. Galen would not allow of cold Bathing under 25 Years of Age, and in Summer; but *Oribasius* and *Agathenus*, who used and prescribed it much more, and knew its Effects much better, advised, nay, pressed the Use of it in all Stages of Life, and all Seasons of the Year, especially when the Water is cold, and in Infancy; and I think Sir *John Floyer* and Dr. *Barnard*, have made out its Usefulness for preventing and lessening several Distempers of Children,

who

who are naturally liable to *Fevers, Pains, Convulsions, Eruptions, Swellings, Inflammations, and Excoriations*. And such as have been accustomed to Bathing the preceeding Summer, may safely continue it in Winter. 7. Hence we know the Depth from which the Spring which supplies a Bath arises; for if it is very superficial, its Temperature varies with the *Atmosphere*, the Water being more remissly or intensely cold, as that is in any fix'd State of cold or hot Weather; and such Baths are not advisable, being now tepid, then cold, and another Time just at the freezing Point. 8. This Use of the *Thermometer* is of special Service in mineral Springs; for when their Waters are affected by, or fluctuate with the *Atmosphere*, it is a Sign that their impregnating Minerals lie very superficial near the Day; and all Digging or Ditching near them is dangerous, if they are of any great Note; for that may either destroy those mineral Principles which give them their medicinal Qualities, or lay some Part of them open to the Air, whereby these Parts may be exhaled, corroded, or somehow altered by that heterogeneous Body and its Salts; thus Sulphur Waters or Chaly-

beates,

beates, may be quite spoiled ; but if it is a Water of no Eminence, and several others of the same sort near it, we have an Opportunity to be informed of the whole impregnating Principles, which may give great Light into others of the same Kind. 9. We know whether mineral Waters, whose Virtue resides chiefly in the volatile Parts, are injured much by Rains, for then they will vary in their Temperature with the Air.

10. We see the Hurt done to Cold Baths, by bringing them from the Spring to the Reservoir in a Pipe, Gutter, or Channel, after they are come to the Day ; or of making two Baths, an inner and an outer, from the same Spring of common Water ; or of letting the Bath lie open to the Air, which should be covered with some Shelter or House. Thus old *Parkwell*, or *Blind-bird Well* near *Worsburgh*, the Spirits in the Spring were two Degrees lower in the outer Bath, though the Day was not hot. *Barnsley* Bath raises the Spirits in the *Thermometer* three Degrees and a half higher than the Spring ; *Acworth* Bath the same ; but such as have a close House immediately over them, lose not above one Degree, as *Litchfield*, *Willowbridge*, &c. All perennial
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brisk Springs have this Character common to them with mineral Waters, that they weigh lighter at the Spring than afterward, and this such Baths lose, by being carried off from their Origin; the same Disadvantage attends in many Peoples bathing before the Bath is let off, and a new one gathered, where the Spring is not strong. Thus at Night, after People bathing all Day, the Spirits in the *Thermometer* stood at $30\frac{1}{2}$ in *Harrigate* Bath, but next Morning, in a full Bath, they fell to 27. The Advantage of a Cold Bath beyond River, Brook, or Rivulet Water, is, that the first keeps pretty near the same Temperature in all Seasons of the Year, Changes of the Weather, and States of the Air, as to Heat or Cold, provided it be a perennial Spring, and rises deep (and none other is fit for a Cold Bath.) But the Temperature of the last varies with Seasons, Air, and Weather; the first also retains the above Mark of a mineral Spirit, but the last do not. In Winter and Frost these three are dangerously cold, and in Summer too tepid to answer any valuable Purpose, except to delicate People and Children, who, to reap any great Profit in chronic Disorders, must ply them longer than either

ther Patience or Weather will serve. Besides, the Use of them with that mineral Spirit, conduces not a little to their healing Property, as that in *Ichley, Willowbridge, Malvern Hills, &c.* and most diseased People are generally more regular in the Use of those Baths, than they are with those of Rivers, &c. 11. Hereby we see the Deceitfulness of a common Notion, that perennial Springs are much warmer in Winter than in Summer, because in a great Frost they smoak or reek; but from repeated Trials I have found them near the same at all times, which shows that neither the Heat of the Summer, nor Cold of the Winter, affect common Springs so deep in the Earth. But upon much frequenter Experiments, I have found that great or long Frost, Snow, or Storms, increase the Heat of the warm Waters, from the Earth's Surface being lock'd up, and their Heat in a manner reverberated. 12. Tho' the open Air in Frost is much colder than either River or Cold Bath, yet is not Walking, standing, or running in it a few Minutes, equal to the Cold Bath; for though there be Contraction, yet there wants Pressure, and both are necessary, and must go together

ther in cold Bathing. 13. We find that the coldest Baths we meet with, are far short of the Cold of either running or standing Water, even in a moderate Frost; and these again are short of the cold Atmosphere in the Sun's Absence. For in another Thermometer *Padgham Heights* Bath brought the Spirits down only to 34, but both a jingling Stream, and standing Pool of the River, brought them to 37 in a gentle Frost, but the open Air laid them to 39; the Sun raised them to 31 in *January*; so that as the Air is warmer than Water in warm Weather, so the last is colder than the first in cold Weather.

14. Artificial Frost being 0, the freezing Point 18, and the coldest Bath or mineral Spring 26; then the Difference between first and second, is to that between second and third, as nine to four, from the coldest Bath or Spring, to the mildest Cold Bath, is six Degrees Difference. The Mean of most Cold Baths being 28, and *Buxton* 59, and the Hot Bath at *Bath* 90, then is *Buxton* very near the Medium between Cold Baths and the Hot Bath at *Bath*, there being 31 Degrees between each; and *Stony Middleton* and *Wirksworth* warm Brooks,

Brooks, are near a Medium between the freezing Point and Body's Heat in a healthy State at Rest; and *Matlock* the Medium between artificial Freezing and the Hot Bath; *Middleton's* are near the Medium, between artificial Freezing, and the Heat of a young Person in an acute ardent Fever. Then we see the different Temperatures of the Air at the same time of the Day, within three Miles Distance, *viz.* on the Top of the Mountain or Promontory of *Crossfell*, and in the Valley below, the first being 29, the last 50. 15. Since there is such Difference in the Depth of the Origin of Springs, there may be, and are, Abundance both of medicinal and common Water Fountains, which never come to the Day, but are conveyed by subterranean Chinks or Chasms, to some large Collection of Waters, as the Sea, Rivers, &c. 16. Perhaps if the fundry Temperatures of Waters produced by the fundry Earths, Fossils and Minerals, both simple and compounded, were exactly known, it might be one Mean or Assistant towards discovering several Minerals, whose Parts not being dissolvable in Water, no Mark of

of them is otherwise to be found in those Springs.

In the first Manuscript I had added other three Columns to this Table, *viz.* the Day of the Month, the Temperature of the Air, and common Water, at the same time when I tried the Bath: But finding them useless with regard to perennial Springs, which keep pretty much at a Stand, I left them out. Superficial Springs, and such as rise out of a hot running Sand, are much affected by the Heat of the Season, as *Bingham Well, Ganesburgh, Kirby-thever, &c.*

17. From this Table we may find out the Severity of any extraordinary hard Frost or excessive Heat that may happen whilst the Use of Thermometers is known, or the Warmth, Temperateness, or Coldness of any Springs that may be hereafter discovered; or how much the Springs, Seasons, or Temperature of human or other animal Bodies, in other Countries, whether near the Equator or Poles, differ from ours in Heat or Cold, and so comparing them with one another: For let the Diameter of the Ball, and Cavity of the Tube of a Thermometer, &c. be what it will, when three
Things

Things are given, it is easy to find a fourth by the same Tube, if the Scale be exactly divided into more or fewer equal Parts of Inch. Thus 1. Take the Degree of natural Heat of a healthy temperate Man's Body, aged about thirty Years, in Bed in a Morning, after the Night's good natural Rest. 2. The Cold of any perennial Spring which smoaks in a hard Frost. 3. The Degree of Cold, of Snow and Salt mixed, *ex. gr.* in the excessive Cold and Frost of Dec. 21, 22, 23, 24, &c. of 1739, I took a new Thermometer, put a Sliding-pipe of Silver on it, full of Holes on both Sides, to see the Ascent, Descent, and Resting of the Spirits through. Each Inch of this Pipe was divided into twenty equal Parts, and tried the Degrees of Cold as below. I used also this Thermometer on its own wooden Frame, each Inch whereof was exactly divided into eight Parts; and the Spirits stood thus on both.

In the Silver Tube.

On the Board.

The Heat of a healthy Body,	275—110
Set in a perennial Spring,	158— 62
<i>Decr.</i> 26, in a calm, clear,	} 115— 55
open, strong Frost Air,	
	<i>Decr.</i>

Decr. 22, cloudy, cold, high	} 80— 31
East Wind, and some flying	
small Snow,	
In River Water, between two	} 125— 49
Boards of strong Ice,	
Hid under soft Snow,	122— 48
Set in Snow and Salt,	55— 21

This Tube having hung six Years in my Stair-case, the Spirits never fell under 72 before, but Decr. 22d they fell down to 84, which is the greatest Cold by some Degrees since 1709; and by this any future Cold or Heat may be determined.

Of Warm and Tepid Bathing.

Having briefly considered some of the Effects of cold Water both common and mineral, in several Disorders, we shall now turn our Thoughts upon tepid Baths, both artificial and natural. But before we come to their Benefit and Uses, let us enquire into their manner of acting upon the Body. And that is first by Relaxation; as the cold Bath produced Contraction, or a Force whereby two Points in any Fibre (for all our Solids and Vessels are constituted of Fibres) are forced from a more remote or

loose Contact, to a more contiguous or near ; so Relaxation is that Alteration in the Solids, whereby they are capable of greater Extension, and yet preserve the Cohesion and Contact of their constituent Parts ; hence they become more flexible and dilatable, whereby the Diameters of the Vessels are enlarged.

Tho' cold Bathing would in time relax, yet few if any human Bodies can sustain its Rigour so long ; but the warm Bath relaxes presently and softens all Bodies, as Skin, Horns, &c. This Relaxation is not confined to the Body's Surface only ; but the agreeable smooth Sensation of it is communicated to the Brain, and by it all over the internal Parts of the Body also. 2. The warm Bath acts by Penetration : tho' some Water may enter the Skin in cold Bathing, yet it is inconsiderable in comparison of what pierces the Body in tepid Bathing ; which Doctor *Wainwright* has demonstrated, and *Quincey* from him, *verbatim*. For tho' at a common Medium *Sanctorius* found that we perspired 5-8ths of our Meat and Drink daily, yet even this Force and Quantity arising from the Skin, is too little to prevent the Insinuation of Water into the Pores ; for Dr. *Pitcairn* has proved, that the Matter of
insensible

insensible Perspiration, in a Minute, is the 1200 Part of the Place it comes from, *i. e.* 1200 Scruples of the Skin perspires one Scruple in a Minute; or the whole Skin shall perspire a Quantity of Matter equal to the Weight of the whole Skin in 20 Hours, *i. e.* in 1200 Minutes; or one Ounce of the Skin perspires 1-1200 part of a Dram in a Minute. Now supposing a square Inch of the Skin weigh one Ounce, then this Inch perspires 1-1200 Part of a Dram in a Minute; but the same Inch of Skin, in the Bath, is pressed upon by an additional Weight of Water, equal to 96 Drams, or 24 cubical Inches of Water. Now since only one 1200 Part of Matter or Weight is perspired from an Inch of the Skin in a Minute, therefore is the Elevation or Protrusion of the Matter perspirable resisted by a Weight 115200 times greater than itself; for 1200 multiplied by 96, makes 115200; but this is not credible nor possible; so that we must allow tepid Water to enter into and mix with the animal Juices in Bathing: Of this we are convinced not only by Theory but Experience, for we have found some, that after strong Rubbing and Friction, and being dressed $\frac{1}{4}$ of

an Hour, yet have weighed an Ounce heavier than when they went in. Not only are we satisfied that the Water in tepid Bathing pierces the Skin and mixes with the Juices, but that also the Water floating in the Atmosphere, in foggy Weather, enters it; for Dr. *Keil* found that by his Servant's riding out in such a Night, his Body gained eighteen Ounces in Weight. Nay, we are further convinced from Observation, that such as use tepid Baths much, have the excretory Ducts of their Skin so cleared, and the Pores so open, that four times the Quantity of Water will be impelled through their Skin, as is into the Skins of such as were Strangers to it before. This Impulsion into the Skin is not from any Suction there, but from the Pressure of the Atmosphere out of the Water, and of both Air and Water in the Bath; and since we have shewn before, that this Pressure throws the Blood from the Externals upon the Internals, the Water being got into and mix'd with the Juices, must with them be cast into the Blood, and so into the whole Habit of the Body. 3. As an Effect of Relaxation, Pressure, Intromission, and Mixture of the Water with the Fluids,

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comes Dilution, the Blood being made thereby thinner, and its Particles rendered separable with more Ease and less Force ; for the Particles of Water, mixing with the Blood in Circulation, will be interposed among the Globules of Blood, and render the whole Mass thinner and less coherent, in proportion to the Admission of Water in the Bath ; and that Intromission will be according to the Density or Levity, Laxness or Hardness, of the Skin. From the whole we see, that the Effect of tepid Bathing depends on the Pressure of the Water, Relaxation of the Solids from the Warmth of the Element, Impulsion and Admission thereof into the Skin and Vessels ; and lastly, Dilution from its Mixture with the Blood. Now let us see, 1. When and where these cannot be of any Benefit to us ; 2. When we may reasonably expect real Service from them. And,

First, The Relaxation may open the Pores of the Skin, and give way to the perspirable Matter to fly off ; yet if this same Matter is too thick, viscid, or otherwise gross and cohering, crude and indigested ; that it is too large, and cannot pass the excretory Ducts of the Skin ; that

same softening and widening the cutaneous Pores may only cause a greater Flux of this Matter to the relaxed Surface, where, by the Largeness or Viscidity of its Parts, it will be shut up in the excretory Ducts or capillary Vessels of the Skin; where, from the continual Supply from behind, the Obstructions must be increased, and either raise a Fever, or irritate the Solids, to increase their Quantity of sensible Discharges. The Method to prevent this Mischief by tepid Bathing, is, 1. To thin the Humours by an attenuating, inciding, thinning Diet, and Temperance; 2. To clear the first Passages by a Vomit and mild Purge; 3. To use the Flesh-Brush Evening and Morning for some Days; 4. To take at Night some Diaphoretic, as Camphire; 5. To use moderate Riding, this being the most advantageous Exercise can be used for promoting Digestion and Perspiration.

2. Since Relaxation is the Effect of tepid Bathing, then must it be highly injurious to Persons of lax Solids and Vessels, for it will extend, dilate, and weaken them more, as in a Consumption, Dropsy, Rickets, King's-evil, &c.

3. Seeing Relaxation by tepid Bathing occasions a greater Derivation of Juices and Humours to the Skin, there to be let out and discharged; then must it be highly prejudicial to atrophic, emaciated Bodies, and also to such as are liable to excessive Sweatings, or to those who have a quick Pulse, thin Fluids, a hectic Fever, &c. For in all those the Expence of the animal Juices is too great already, and whatever increases that, subtracts from the pining Body, and hastens its Ruin. 4. This shews the Mischief of tepid Bathing to idle, sedentary Persons, who eat and drink freely, but use not Exercise answerable to it; and also to studious People, who subtract too much from the Organs of Motion, to bestow on those of the Intellect, to the depauperating and relaxing of the first. But to come to the real Advantages of the tepid Bath, they are many, and extend to a great Variety of Cases, even as many as proceed from too springy, stiff, rigid, inflexible, indilatable Fibres and Vessels; and either their too great *Conatus*, or Struggles to bring themselves from their Circumference to their Centre,

either to narrow, or shut up the Cavity of the Tubes, and there endeavour to squeeze, repel, or hinder the Influx of the Fluids, and to prevent the Expulsion of the Blood from the Heart, or out of the great Vessels. 2. From some unnatural and extraneous Body lodged in the Cavity of some small Vessels, extending, widening, and tearing it. Or, 3. From some sharp saline Matter irritating the Fibres and Vessels, raising Pain, Heat, Throbbing, a Fever, &c. Or, 4. Some adventitious Load laid on the Surface or extrem Parts of the Body, by the Retention or Diminution of the invisible Discharge. 5. From some putrid Humours hoarded up in the Blood, and to be separated from it, and thrown upon the Surface. For the last Intention, topical Bathing or Fomenting is of unspeakable Service in Small-pox, Measles, or other Diseases, where the Health and Life of the Patient depends on regular cuticular Eruptions. The Benefit of this I have seen so often, that I am surprized it is not more used daily, as it highly deserves; for by relaxing the Skin of the Extreams, it may
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be made susceptible of a large Share of that Matter, to the no small Relief of the Head, Face, and Vitals, upon the Safety of which depends the Person's Recovery. It is the Thickness and Stiffness of the Skin that makes these Distempers mostly dangerous, and often fatal, after Youth is over. Now the Skin is not to be softened by expulsive Cordials, hot, and spirituous Medicines, which rarify the Blood, increase its Velocity, and serve to turn a mild Disease into an inflammatory and fatal one ; or to drain out of the Body, by Sweat, the more thin and aqueous Parts of the Blood, which should prepare the Skin for the Reception of the morbid Matter, and fill and keep up the Pustles on the Skin. It is from this Density, Stiffness, and Rigidity of the Skin, that Pleurifies, Peripneumonies, Quinsies, and other inflammatory Fevers, are mostly fatal to Ditchers, Fishermen, and others, who are much in the Water, and are therefore much more obliged to sensible than insensible Evacuations ; sure a more rational and promising Remedy cannot be proposed than tepid Bathing, with Bleeding, which
may

may diminish the Quantity of Blood, and soften the Skin, cleanse its excretory Ducts, and make way for better Perspiration. In all preternatural Watchings, whether with or without a Fever, in these cold Fits, which usher in acute Fevers, where the Attrition of the Liquids against each other and their Vessels are lessened, a Stagnation of the Fluids at the extream Parts is threatened, nothing can be more mischievous than heating, stimulating Medicines; and nothing better, safer, and more beneficial can be done, than tepid Bathing, and Friction after it, by which many dangerous and fatal Fevers might often be wholly prevented. In Ravings and Delirium in a Fever, or where there is a too great Raptus of the Blood to the Head without a Fever, a seasonable Use of these Baths, would be of inexpressible Service; 1. To soften and dilate the Skin and Vessels, and dispose them for a more equal Distribution of the Blood; 2. By lessening the Irritation of the Vessels, by the stimulating Salts of the Blood. 3. A Delirium is preceded by very thin pale Urine, which shows the urinal Salts to be retained in the Blood,

Blood, and shortly to be thrown on the small Vessels of the Brain, to the imminent Danger of the Patient. Now tepid Bathing is of all others the most likely Method, and has often been found so in Effect, to relax and dilate the Strainers of the Kidneys, and make way for the Filtration of the Salts retained in the Blood, which had irritated and contracted the Ducts of the Kidneys, so as the Diameters of the Vessels were too short or narrow to let the Salts pass. In violent and sudden Passions of the Mind, as Fear, Grief, Joy, &c. which raise the Elasticity of the Fibres and Solids to their highest Peg, and often end in immediate Death, Madness, Watchfulness, Ravings, or Fevers; can any thing be more absurd and monstrous, than Bleeding, Blistering, and other Evacuations, or cheering Cordials, &c. when it is plain the Solids are wound up to their highest Pitch, the Fluids have been impetuously and violently ground down and expelled before, as is sensibly perceived by the Noses of the By-standers often? Here the whole Chance lies on immediate Relaxation and Dilution, and these can be no way so speedily and effectually

effectually procured as by tepid Bathing, and frequent, plentiful, tepid, softening, paragoric Draughts, which may at once inwardly and outwardly loosen, smooth, and fill the Vessels, and dispose to Rest. In the Agonies of Gravel and Stone, and in Suppressions of Urine, nothing tends more to loosen the Ureters, Neck of the Bladder, and its Sphincter, than tepid Baths set in up to the Stomach; this eases Pain, makes way for the Discharge of Urine, Stone, Sand, or fabulous Matter. In convulsive Colics, where, from the Contraction of the Nerves of the Mesentery, the Bowels have been squeezed to the Vertebrae of the Back, and the Patient's Life in the utmost Danger, what wonderful and sudden Relief have we seen these Baths give? And not only have they been of use for the present, but by repeating them twice or thrice a Week, for some time, the return of the terrible Distemper has been quite prevented. In Colds, the common Method is Bleeding, thinning the Blood, and promoting Perspiration; but these Designs might be much assisted and advanced by this Bathing;
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for, by the Immiffion of the Water into the excretory Ducts of the Skin, the viscid Matter in them would not only be thinned and expelled, the Veffels cleared, loosened, and softened, and Perspiration very much promoted and facilitated; but the Defilement of the Skin by Pimples, Ulcers, Scabs, Blotches, &c. would be prevented: For these are the Effects of this Matter lying in the excretory Ducts till it turn acrid, corroding and tearing the capillary Vessels. This Kind of Bathing is also useful in all sudden violent Pains; for these are the Effects of a Contraction of the Solids: But tepid Baths relax the Solids, and so mitigate or remove the Pain, and take off Rigours, Convulsions, and Heaviness; and, by their relaxing the hard and tense Skin, and softening the Flesh, they fill the Vessels on the Surface, which were almost collapsed: Hence the white, pale, languid Looks are changed to ruddy, or a fine Mixture of red and white. They also promote Suppuration, by tearing off the Stiffness and Indilatability of the Solids; and discuss flatulent Humours, by cleansing and widening the Pores of the Skin;

Skin ; encreasing Perspiration, and attenuating and rarifying the gross Humours ; and also they help to relieve Pains of the Side, Diseases of the Back and Breast, by promoting and facilitating Expectoration, as well as by abating the Inflammations. They are useful in Pains of the Eyes, Ears, and contracted or Sinew-grown Members, by relaxing the Membranes of the first, and the Muscles and Tendons of the last. These few Instances, out of many that might be advanced, shew not only the Usefulness of tepid Bathing, but the Manner how it produces its Effects ; which being known, we may not only add a great many others, but also see where it is hurtful ; as in all Weakness and Relaxation of the Nerves, which Disease it must certainly encrease, and aggravate all the Symptoms of it, by letting down the Spring of the Fibres still lower ; and also in Hæmorrhages, by rarifying the Blood, encreasing its Bulk, and widening the Vessels ; and in a Lowness and Depression of Spirits, from the Slowness of the Circulation, and in too great a Penury and Dissolution of the Particles of the Blood, &c.

4. *Of bathing in Mineral Waters, Hot or Cold.*

Having considered all Cold Baths in the same Light, as acting merely by Pressure and Contraction, and all artificial simple tepid Baths, as producing their Effects by Relaxation and Dilution, let us now view Bathing in another Light, *viz.* in mineral Waters, and therefore medicinal. These Baths are either, strictly and properly speaking, mineral Waters impregnated with volatile or fix'd mineral Principles; or they are such as differ from most common Water, merely on account of the Soil they are strained through, and the particular Kind of Earth they carry in their Interstices, which may justly appropriate them to some particular Uses above common Water; as petrefying Waters, which carry much impalpable Earth in their Pores, and are therefore proper to bathe in for an excessive Perspiration, or too great a Dilatation of the sudoriferous Ducts; Chalk or Lime-stone Waters, which, being more drying and healing, are therefore better adapted to old

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Ulcers,

Ulcers, ulcerated Wounds, moist cuticular Eruptions, &c. Tin and Lead Waters, which are said to be colder, therefore cause a stronger Contraction; Marle Waters, which are reported to encrease the Contractility of the Fibres. As to mineral Waters, properly so called; Sulphur Waters which are soft, cleansing, healing and balsamic; vitriolic Waters, which of all others are most astringent and strengthening; nitrous Waters, which are cooling, cleansing, and resist Putrefaction; Waters with common Sea Salt only, which are most heating, drying, and stimulating; or mineral Limestone Waters, which are cleansing, drying, and healing. Mineral Water Baths are either hot, as the *Bath*; tepid, as *Buxton*, and the rest of the *Derbyshire* warm Waters; or cold, as all the Chalybeate and common Sulphur Baths, whether more or less saline. Bathing in the warm Waters may be used at any time of the Year, tho' they are warmest in the coldest Weather in Winter, from the Coldness of the Atmosphere, and the Repletion of the Pores of the Earth with Water, or their Constipation by Frost, which prevent the Dissipation

tion of the Heat of the Water. Cold Baths are not to be used but from *May* to *September*, except by such as have been accustomed to them; for not only is our Atmosphere colder, but the Water is heavier; the Body is hotter; its Fibres better braced, and its Fluids of a stronger Texture and Consistence. *Fallopious, Baccius, &c.* tell us, that the first Intention of bathing in warm Baths is Evacuation, especially if done in nitrous, sulphureous, or chalybeate (by them called aluminous) Waters; and indeed by relaxing the too rigid and stiff; or bracing the lax Fibres, attenuating; thinning, and squeezing out the viscid perspirable Matter of the excretory Ducts of the Skin; and promoting a free Perspiration; and also by its compressing the Bodies Surface; it throws the Fluids inwards: Hence two very considerable Evacuations are increased; *viz.* Urine and Perspiration. 2. Relaxation, or softening the Contractions, Stiffness and Rigidity of the Parts, whether by Cold, or some compacted Matter, Obstruction or Emaciation; and for this *Buxton* is the surest known Relief in this Island, it being only tepid; for hot Waters rather contract than relax, stiffen than soften. 3. Dry-

ing; and for this Limestone Sulphur-Baths are remarkable; hence their wonderful Service in Cachochymics, Palsies, beginning Dropsies, White Swellings, running Sores, Defilements of the Skin, &c. 4. Moistening; but Relaxation is supposed to go before; for to restore the due and regular Influx and Circulation of the Blood and Lympha to dried atrophic Part, before Relaxation, is impossible; therefore we here recommend the naturally tepid Waters.

5. Warming; for as soon as you are come out of *Matlock* or *Stony Middleton* Baths, an agreeable Glow of Heat and Redness of the Skin break out over the Body; at which time Perspiration runs high; from which, and the Compression of the Solids, the Person is alert, lightsome, and pleasant, and seems lighter. 6. Cooling and Strengthening, from lessening the Humours by Evacuation, bracing gently the Body, taking off clammy Sweats, relaxing too stiff Solids, moderating a too rapid Circulation, correcting the acrimonious Humours, and lessening the viscid, aqueous, or adhesive. On these Intentions depend their corroborating, restraining, aperient Properties: from these also they promote Digestion, Chilification, Circu-

Circulation, Secretion, Evacuation, and Excretion. *Fallopious* would have us use the Bath only once a Day at beginning, then twice a day after. In tepid Waters, he says, they may stay in five Hours at a time, in hot Waters only two Hours; and that the Patients must go in at Sun-rising, and seven o'clock at Night. But we look upon from 15 Minutes to an Hour in tepid Baths, and half that Time in the hot Baths, and a few Minutes in the cold Baths, sufficient.

The Reason why Bathings in mineral are more efficacious than in common Water, is,
 1. From the Admixture of saline and metallic, mineral or sulphureous Parts with the Water, which make it more stimulating, attenuating, bracing, dissolving, cleansing, drying, healing, cooling, penetrating, discutive, and corrective of Acrimony, softening, smoothing, &c. 2. From the Minuteness of these adventitious Mixtures; for the medicinal Parts of these Waters are really so small, that they are not only invisible, when looked for thro' the finest Microscope; but are incolligible by any Art yet known, and incoercible by any Vessel; and it was necessary they should be so; for had it been otherwise, they had been incapable

to answer the Designs of Providence, or the Expectation of human Necessities. For since we are satisfied that nothing can pass even the Lacteals but in a fluid Form, much less could they pierce the scarf Skin, enter both by the Mouths of the excretory Ducts of the Skin, and pass thro' the very Interstices or Texture of Fibres and Vessels, and so get in and mix with the Blood both ways.

2. And as the medicinal Parts of these Waters are smaller than the grosser Particles of Matter themselves; the first will not only enter, but enter in greater Quantity than the last, even as a steamy or dry Vapour; but that the first is smaller than the last, is plain from the Incolligibility and Incoercibility of the first, whereas the last may be both gathered and retained. But the Skin of a living human Body is not only more thin and porous than that of other Animals, because of its Cloathing, but more spongy and open than any glass, metallic, or earthen Vessel, which are much closer than Vessels of Wood, yet the volatile or spirituous Parts of mineral Waters are not retainable by the first, and much less by the last; and if these volatile Parts make their way through the Pores of the first Vessels, much more through the Skin of a human Body, which is much
more

more patent and large than Vessels of Wood. Consider we again not only the Aptness and Disposition of these Parts to enter the Body, but their Effects when they have entered it; for, 1. From the Tenuity of their Parts they must mix with and be entangled both in the Fibres, Vessels, and their Contents, and be as so many Wedges separating the adhesive, viscid, glutinous Juices in these small evanescent capillary Tubes, or acting according to the kind of the volatile mineral Principles and their Compositions. 2. Both from the Pressure of the Water, the Smallness of its Particle, the Relaxation and Softening of the Skin, and the Penetration of the volatile Parts, some, yea not a little of the common Vehicle must unavoidably be let into the Body and Vessels by the Skin, which joining the volatile Principles already let in, both will attenuate, thin, and dissolve the tardy, gross, or impacted Humours; and the Vessels at the same time being loosened, these noxious Juices must necessarily be lessened, and Perspiration promoted by each Immersion. 3. Consider we the Area to be immersed and exposed to the Water, even the Body's whole Surface, which in Adults, one with another, is not less than 15 square Feet; and since every Scruple of the Skin

has been demonstrated to discharge a Quantity equal to its own Weight in 20 Hours. Then how vastly many must the perspiratory Ducts or Outlets of that Scruple of Skin be? and consequently the Immission of the volatile mineral Vapours through the Skin, from the Water, must be very considerable, capable of producing very great and surprising Alterations in the Body; which Alterations will be more sensible, as the mineral Waters are more highly impregnated with a volatile mineral Spirit, whose Admission into the Body by the cutaneous Pores cannot be hindered or prevented by the plentifullest Discharge of perspirable Matter. 1. Because the more viscid the Matter shut up in the excretory Ducts is, the more porous, and the more room there is in it to receive and lodge the mineral Steam from the Water. 2. Because the more viscid or fizy Part of any Fluid keeps always nearest the Sides of the containing Vessel, whilst the more fluid, being fitter for and more susceptible of Motion, keep the Axis or Middle of the hollow Cone or Cylinder. Now, seeing neither the Force of the Vessels discharging the perspirable Matter, nor the Pressure and Weight of the Juices of the Body, like so many Columns of a far greater Altitude than the

Bath,

Bath, can prevent, or stop the Discharge of this Matter in the Bath, it is not possible nor credible that it should hinder the Insinuation of this mineral Spirit, which not only enters by the Mouths of the excretory or evanescent Vessels, but even thro' the Interstices themselves, and so falls in directly upon this Lensor on the Sides of the Vessels; nor can it be alledged, with the least Shew of Reason, that because the Body weighs not more after bathing than before, therefore there is no such Insinuation into, nor Mixture with the Blood: For, 1. The Presence of these volatile mineral Principles, are so far from making the Waters in which they reside weigh heavier whilst they are in, that it weighs sensibly lighter then, and heavier when they are gone. 2. The great Increase of Perspiration after bathing not only proves the Relaxation, but the Immission of some fluid Body than the Blood, whereby the last is diluted and prepared for a Discharge by the Skin. But, 3. What not only proves the Existence of these volatile Principles in mineral Waters, but their Insinuation into, and Mixture with the animal Juices, is what we find by Experience, that any outward, equal, moderate Warmth, relaxes the Skin, and opens its Pores, and makes

way for the perspirable Matter to get off; but if the Humours are gross, viscid, or adhere strongly to the Sides of the Vessels, this, loosening and softening the Skin and widening its Vessels, will only cause a greater Flow of these crude Humours to the Skin, where they will stick and stop the Mouths of the capillary Vessels; which Obstruction will still be increased from behind, till the Vessels are irritated to make a larger Discharge; but they being distended beyond their natural Tone, and the obstructed Matter, at the same time, very viscid and gross, a Fever must and will ensue: and this I have known oftener than once to be the Case of these fool-hardy People, who to cure an obstinate chronic Ague have run into the cold Bath, and paid for their Folly with the Expence of their Life. But by going into the naturally warm or tepid Bath first, these volatile Principles making their way into this cohesive glewy Matter, and diluting, attenuating, and preparing it for Motion, it is expelled, and the Body relieved, without any Danger or Detriment: Then the Vessels having been before distended, they are hardly to be supposed to receive their Force by a relaxing Method, as warm Bathing is; but they are apt either to under-do it or over-do it, which

is

is easily prevented, by applying to the cold Bath after the hot. This is the true Reason why cold Baths often succeed, when the hot have failed; for a fizy, tough, phlegmy Humour, must first be diluted, loosened, and dissolved by the hot Baths, then the cold must brace the Muscles, Tendons, Vessels, and Nerves. 2. Where the Disease is of the inflammatory kind, especially where the Blood makes its strongest *Impetus* upon the Vessels of either the Head or Breast, by the use of hot Baths; in this Case the animal Juices are rarefied and heated, fill and distend their Vessels more, and the old Distempers are increased, or new ones called in to their Aid. Now this Increase of febrile Heat, Head-ach, Hectic, &c. can neither be owing to the common Vehicle nor its Warmth, therefore must be owing to the Admission of these mineral volatile Principles into the Blood. We might instance the surprizing good Effects from bathing in natural hot Baths, for that intractable Distemper by Medicine called Emphysema, or a windy Dropfy, where the Swelling shifts from place to place in an Hour or two, and is attended with a Fever; where the flatulent viscid Matter is attenuated by the mineral Spirit, diluted by the Water, and the Pores

of the Skin laid open for its Discharge. Now here the tepid Bath would only relax the Solids more, and encrease the Disease ; but the mineral Spirit it is chiefly that incides, separates, and attenuates this gross Matter, and prepares it to be cast off, and the cold Bath braces up the Pores afterward. Again; in the Palsy tepid Baths increase the Relaxation, but natural hot Baths do mostly restore the Diseased ; this can only be owing to that intractable, impalpable, powerfully penetrating mineral Spirit ; this lets us plainly see, that all the Parts of an human Body, are to this Spirit as a Sponge is to warm Water. To add no more Proofs of this, all these Diseases, in which natural hot Baths are found most efficacious and successful, and indeed in which they rarely fail, are of the nervous Tribe ; and the Reason of this is, because we know of no Medicine so capable to reach and enter these fine imperceptible delicate Tubes ; but it is indisputable that the Spirit of these Waters not only enter them when drunk, but even by bathing, as we see from their amazing Effects by bathing only. To set this Matter in a clear Light, take not only any medicinal Preparation, but any fix'd Principle impregnating mineral Waters, when separated from them,

not

not diffolvable in common Water; dry, powder, and levigate either the first or last, as subtilly as possibly you can; then examine both through a fine Microscope, and their Particles will appear larger than the Blood Globules; and the Diameter of one of the largest and first Water Globules of Blood, exceeds not one two-thousandth Part of an Inch; and the Diameter of any Particle visible to the naked Eye, must not exceed one hundredth Part of an Inch; but *Lewenboek* and others have discovered an Infinity of Vessels in the Body, whose Diameter exceed not one 80000th Part of an Inch. Since therefore there are Vessels whose Diameters are so inconceivably less than the Blood Globules, and the finest levigated Substances are so much larger than the Blood Globules, it both is and was absolutely necessary, that the more medicinal Parts of mineral Waters should be thus minute and fine, that they might not only pass, but even penetrate, from without, the delicate Tubes in the Body, and act upon their Fluids. Now the Diseases in which natural hot Baths are found most remarkably serviceable, are such as are exactly adapted to this Doctrine. *viz. Universal Palsy*, with Loss of Sense and Motion, or only loss of one; *Numbness*,
Weakness

Weakness or Lameness, proceeding from thence, or tending thereto ; prickling throbbing Pains, with a Sensation of Stupor, at the same time Feebleness of the Limbs; Lameness from Accidents, as Gout, Bruises, Falls or Blows ; or from Strains, Mortifications, Poisons, mercurial Ointments, Wounds or Ulcers, partial Palsies, as Hemiplegia, when the Use of one Side is taken away ; Loss of the Use of a Hand, Arm, Foot, Leg, Tongue, Gullet, or any of the Sphincters, &c. Or these partial Palsies with Cramps and Convulsions, with a Rheumatism or without a Rheumatism, and Dropsy ; both Palsy general or particular, from a Scurvy ; Deprivation of Motion from Contusions, frequent Strains, or Dislocations, from the Weakness or Laxness of the Tendons and Muscles ; violent Tremors, and Convulsions of long standing ; chronic and habitual Colic, with a Palsy ; dry Gripes, with or without a Palsy ; Gout, with or without Contractions ; Gravel or Stone ; Emaciation of the Parts ; Sciatica, Chiragra, with or without Lameness, Weakness, Distortion, Contractions, or Pain ; Gout with Scurvy and Hyppo ; Hyppo and Scurvy ; Scurvy alone ; cutaneous pustulous Eruptions ; sore running Head and Neck, with or without ichorous or purulent Matter ; Scurf, Scales or dry Scabs,

King's=

King's-evil, Leprosy, Hysterics, Hippos, Cachexy, Rheumatism, whether from a Viscidity of the Juices, or Saltness of the Humours; old Aches and Bruises; Pain of the Stomach and Indigestion; Vomitings; Dropsy of the Feet and Legs; Pain of the Stomach and Guts; with hectic Quotidian, and Consumption; Flatulency, or Wind in the Stomach or Bowels; Obstructions of Urine; Shocks of the Brain by Falls or Blows; Corpulency; Limbs contracted, or Sinew-grown; Catamenia, obstructed, excessive, depraved or vitiated; Fluor albus, Fistula's; running Ulcers; constant Coldness, with Shakings; Belland. Prolapsus uteri; white Swellings; pined or emaciated Members; scorbutic Consumption and Atrophy; Convulsions and Asthmas, cured or prevented in Children by the Mothers drinking the Waters; Use of the Limbs lost by Wrestling, &c. This is a Catalogue of the Diseases in which Guidot, Pierce, and other Bath Writers, have found Bathing in the Bath Waters most effectual; and we find them all chronic Disorders.

2. Nervous, from a Redundancy, Viscidity, and other Depravities of the nervous and lymphatic Juices: Or, 3. From acrid, scorbutic, muriatic, or lixivial alkaline Salts, fixed, pricking, tearing, and paining, the

sensible

sensible delicate nervous System ; or thrown
 forth and defiling the Skin, or causing In-
 flammations, Suppurations, and Ulcers, of
 short or long Discharges. What makes
 Bathing in mineral Waters more powerful
 than common Water is, because in these
 Diseases of the Skin, the Waters act not so
 much from the Dissolution, as it is from
 thinning, correcting, and drawing forth the
 Sharpness and Acrimony of the Humours,
 whilst the alkaline Earth dries up the ouz-
 ing, thin, watery Discharge upon the Part,
 and the Sulphur cleanses, heals, and astrin-
 ges. What seems a Mystery in these Wa-
 ters is, that they should answer seeming
 contrary Indications or Intentions; as to cure
 Corpulency and Emaciations, restore Sinew-
 grown or contracted Limbs, and paralytic
 Members, provoke, stop, or regulate the
 Catamenæ, &c. But these are very easily
 accounted for, since the Cure of Corpulency
 depends on promoting and increasing Per-
 spiration ; to which not only Bathing, but
 Exercise and Temperance, contribute ; and
 the restoring Nourishment and Growth to
 withered Limbs or Members, can only be
 brought about by attenuating the viscid
 Juice, and opening the Obstructions which
 prevented the Influx of Blood and Spirits
 into

into the Arteries and Nerves, and unbending the Spring of the rigid Solids, or bracing the loosened Fibres. Contractions or Sinew-growing require only Relaxation to soften and render the Fibres more flexible, and the Vessels more dilatable. Palsies require the attenuating and wasting of that Redundance of viscid nervous Juice, which soaks and relaxes the Nerves, and deprives them of Action and Sensation; and bracing up the relaxed Fibres. How Bathing attenuates the Juices, I have shewn before; as also how it wastes them by Perspiration, and thereby enables the nervous Filaments to reassume their natural Elasticity, whilst both Steel and Sulphur, in the Water, act the part of Restrictants. Whatever adds to the Quantity, Motion, and *Momentum* of the Blood, and at the same time determines it for the uterine Vessels, may be called an Emmenagogic; and also whatever takes off the Stiffness and Indilatability of these Vessels, and makes them insusceptible of a greater Accumulation and Load of Blood. On the contrary, whatever corrects the Acrimony of the Blood, lessens the Quantity of other animal Juices, invigorates the Fibres and Vessels, or gives the Blood a
free

free and unlesſened equal Courſe into all the Parts of the Body, may properly be called an Anti-emmenagoc. But that mineral Waters do all theſe Things; and how, I have ſufficiently explained above; and ſhall not here repeat it. We ſhall not dwell longer here on the Choice of proper Baths in each particular Caſe, that falling more naturally in under the inward Uſes of mineral Waters, but only obſerve in the general, that natural hot Baths are improper for heſtical Perſons, and ſuch as are liable to Inflammations or inflammatory FEVERS; as alſo for the plethoric, hot, bilious Temperaments, and for very lax, weak, atrophic Habits, &c. The Spring and Autumn; and in caſe of Neceſſity, the Winter itſelf, are proper for them; but the Heat of Summer, and during the Reign of any contagious epidemic Diſtemper, we judge very improper Seaſons for the hot Baths; or preſently after a full Meal, or with a Retention of the alvine or urinary Excrements; therefore a Laxative or two ſhould be given to prepare the Body, and they ſhould go into the Bath early in the Morning faſting, or late at Night, before Supper. When Bathing is requiſite for People abounding with

Blood,

Blood, a Vein should be opened first. As to the Time they are to stay in the Bath, and how often they are to go into it; once a Day at first, and only stay in a few Minutes, till they dip over Head three or four times, then get out, and let the Body be well rubbed and dried: And as the Person finds it to agree, he may go in oftener, and stay longer. The Number of Days he is to go in, depends intirely on the Heat of the Bath, and the Case and Constitution of the Patient; for at *Bath* 14 or 15 Days is reckoned sufficient, before either an Intermission or Exchange of Bathing for Drinking. At *Buxton* 20 or 30 times may be allowed, tho' fewer will be, and is of very great Service. At *Matlock* they may go in a Month or more. As to Diet, beware of Intemperance in Eating or Drinking; let the Dinner be sparing, that it load not the Stomach; at Evening Bathing avoid Malt Liquors, Drams, and all viscid and spirituous Liquors, with all such Things as render the Body costive, hot or feverish, or require long Time and great Strength to digest; keep seasonable Hours, that all Digestions and Evacuations, sensible and insensible, may be duly and regularly performed; and that you be not

shortened nor disturbed in your Rest, nor lose the proper Seasons of Bathing. But for these Things the residing Physician is always to be first consulted.

Pumping is another outward Use of both common and mineral Waters, but we here consider the last only. Before the Invention of Pumps, the diseased Person either stood under a Water-fall, as from an over-shot Miln, or a Cascade from a Rock, or other Precipice ; or two tall strong Fellows took up Water in Buckets, and poured it leisurely, in an even Stream, upon the Part affected. But since the Invention of Pumps by *Ctbezefius* an *Athenian*, or, as others will, an *Alexandrian*, about 200 Years before Christ, that Method is found much the easier and better, 1. Because the rest of the Body being kept dry and warm, only the diseased Part is touched. 2. Because the Pressure of the Water on that particular Place is far greater ; for whereas a Cylinder of Water two foot high, whose Basis is equal to $\frac{1}{4}$ of a Foot, presses on the Skin with a Weight equal only to $9\frac{1}{2}$ lb. a Column of Water of the same Basis ; but 10 Foot high comes with a five-fold greater Weight, besides the Weight acquired by its Fall ;
hence

hence falling with such Increase of Weight on the Part, it is so much more forcible, penetrates deeper, and carries its Efficacy farther. 3. When cold Water is used, the increased Weight and Cold will make the greater Contraction of the Muscles and Vessels of that Part; the greater the Contraction, the stronger the Attrition of the contained Fluids, and the deeper will the Effect reach. 4. This Pressure and Contraction by cold Water, not being like Bathing, reaching the whole Surface of the Body, but only that Part affected, the Resistance from the other Parts not pressed nor contracted, will be lesser; hence the Contraction of Fibres, Vessels, Nerves and Muscles; and the expulsive Force thereupon will be much greater, the sily, thick, or stagnating Humours must be more forcibly propelled, and the Diameters of the Vessels shortened; so that they act with greater Power over their contained Fluids, the Fibres will be shortened, braced and strengthened. 5. In Pumping with mineral Waters, the more active, penetrating, volatile, and medicinal Principles are hereby darted into the Skin, whose Pores are much larger than these minute spirituous Particles,

whereby Attenuation and Dilution is wonderfully promoted in the Fluids, and they are restored to their Motion, and carried either into the Blood, or to the Outlets of the Skin, and there discharged, and the Fibres and Vessels are restored to their Elasticity. But as the mineral Water is hot or warm, it relaxes the Skin; part of the Water, together with the volatile mineral Principles, enter the Pores, gradually thin and dissolve the morbid Cohesions of the Blood, enliven and excite the Solids to more healthy State and Vigour. Therefore Pumping has been chiefly used for *Stupors, Lethargicness, inveterate Headachs, Numbness, Lameness, Contractions, fix'd Pains, Rheumatism, white Swellings, old Aches from Falls, Strains, Blows, Dislocations, &c. Sciatica, weak Limbs, Lameness with Contractions, Relaxation from frequent Dislocations or Contusions, Deafness, Blows on the Head, Dulness, Pains of the Stomach, Shoulders, &c.* and habitual Vomiting. The Time of Pumping is the same with that of Bathing, the Number of Strokes are from 30 to 500. The Time to hold the Part under a Fall of Water, may be from 3 Minutes to 15; or it may be repeated two, three, or four times, at short Intervals.

C H A P. IX.

Plain and necessary Directions for Gouty Persons.

THE *Gout*, when rightly managed, instead of a Punishment and Misfortune, is a Means to lengthen Life, and a Sign of strong Principles of Health, and a sound Constitution at the Bottom. But of all the Diseases incident to human Nature, it requires the soundest Judgment and the steadiest Conduct, to treat it aright; and enraged it is rendered the most dangerous by the slightest Errors. *Sydenham* has rightly observed, that the most judicious and safest Way of treating it, consists, in neither weakening Nature by strong Evacuations of any kind, and too low a Regimen; nor running into too high and inflammatory a Diet; to keep the Gouty Humour upon the Limbs and Joints, and hinder it from returning inward upon the noble Organs; and the same holds good as to the Nature of Medicines. But it consists in the Medium, in a temperate Regimen, sufficient to maintain and preserve the Spirits strong and free,

and the Circulation full and extended, to preserve the Vigour of the Man, maintain the natural Heat and Strength of his Constitution, and keep up the Fabrick in one Plight, so long as Nature intended him originally to last, without heating, inflaming, or burning up his Fluids or Solids, enraging and increasing his Pains, or bringing out the Gouty Matter with too high, or hot a Diet and Medicines, will certainly succeed best. A Man that has once had a regular *Gout*, might sit down contented, with the Mortification of ever being subject to it. All *Panaceas* or infallible Remedies, or Medicines that totally extirpate the Gout are vain, quackish, or knavish; therefore, since the *Gout* he must have, the true Way of treating it is, to expel it on the Joints and Limbs, whenever the Materials for a Fit are stored up in the Fluids, but not to administer more such; for the *Gout* there is necessary for preserving the Vigour, Strength, and Spirits of the Man. In order therefore to obtain this End, it should be treated under these different Views;

1. *When the Fit has actually seized the Gouty Person;*
2. *In the Intervals between the Fits;*
3. *Of these two in Winter Season;*
4. *Of the same*

same in Summer ; 5. *Of the Gout in the Limbs* ; 6. *Of it in the noble Parts*. Under which Heads shall be included every Thing that happens to a Gouty Person, in all the several Revolutions and Changes of that cruelly beneficial Distemper.

S E C T. I.

Here we shall consider *the Fit either forming* ; 2. *formed, or fixed* ; 3. *going off*. When *a formal Fit of the Gout is coming on*, which is prefaged by a Sickness at the Stomach, a quick Pulse, universal Heat, and flying Pains. On the first Sickness of the Stomach drink plentifully of *Sack Whey*, in each Draught of which, put in from 10 to 15 Drops of *Spirit of Hartshorn*, *Sal Volatile*, or *Spirit of Sal Ammoniac* ; this will thin the morbid Matter on the Stomach, and so either send it down or bring it up. Then take a *Milk Glyster* with *Camomile Flowers*, and some Seeds boiled in it, when strained add *Lenitive Electuary* one Ounce, *Electuary of Bayberries* one fourth of an Ounce. This will gently invite the *Gouty Matter* to the *Limbs*, and keep the Head and Stomach free. If the Head aches it

will be proper to apply Plaisters of *Burgundy Pitch* to the Ankles, and *Cephalic Plaisters* with *Euphorbium*, to the Feet. This greatly facilitates the Expulsion of the Humour that is to fall on the Limbs, and will give no Sort of Pain or Uneasiness. But all this must be done on the first Sickness, when there is reason to expect a Fit, and the Humour is not yet fixed, or seated on any particular Part of the Limbs; for if it is already fixed, this Work is needless, it is then to be treated as ——— When it is actually *formed, and fixed on the Limbs*; the Business is to keep it there, or send the Remains to some other Limb, to spend its Fury on these Parts as soon as possible. This is done, 1. By *lying in Bed warm*, while the Pain and Inflammation lasts; 2. By drinking liberally of *Sack Whey*, or any other warm small Liquor, such as common Water boiled with burnt Crust of Bread and a few Spices, as *Carvy*, lesser *Cardamoms*, and a little *old Mountain* mixed with it, or the like. And with a few Drops mixed in each Draught of the above *Spirits*. 3. By wrapping up all the Limbs in new *Flannel*, for the *Wool* that People sometimes wrap their Limbs in, is greasy, and apt to

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stop

stop the Pores of Perspiration, which should be our great Care to keep open.

4. Taking every Night at 7 or 8 o'Clock 20 Gr. of *Gascoigne Powder*, and half a Dram of *Confection of Alkermes*, drinking the following Draught ; take of *Camomile Flower-Water*, *simple and compound Wormwood Water* of each one Ounce, of *Liquid Laudanum* 30 or 35 Drops, (or more, according to the Violence of the Pain, and the Length of Time it has been taken, or the Person accustomed to it, and perhaps it may be requisite, to take half that Quantity more about Midnight, if the first composes not) and a Dram of *compound Spirit of Lavender* ; the Vehicle may be altered as is most grateful to the Stomach, but the above *Liquid Laudanum* must be continued, as the only Quieter of Pain and Procurer of Rest, and also the best *Gout Medicine*, in this Case ; for it is the most sovereign Relaxer of stiffened Solids, and the strongest *Diaphoretic*, both which make it the most excellent *Antiarthritic Medicine* known. When the Fit is going off, the Pain pretty much over, and the Inflammation gone, get out of Bed as soon as may be, and sit up as long as you can, for that is the best

Way

Way to get Strength and Appetite; there-
 after, first begin your *Rhubarb Preparation*
 instantly, and repeat it every Night if you
 can possibly swallow it. This is the finest,
 easiest, and most effectual, as well as most
 pleasant Preparation that can be. *Take Pow-*
der of finest Rhubarb 10 Drams, Nutmegs 1
Dram, Orange Peel 2 Drams, Cochineel half a
Dram, infuse 24 Hours in a Pint of true
Arrack, by a warm Fire-side; strain, and
of the Liquor drink one or two Spoonfuls
every Night at Bed-time. 2. Get, and
 drink every Morning a Pint and a half of
Asses-Milk; and at 6 in the Afternoon.
 3. Drink *German* or *Pyrmont* Water with
 Wine at Meals; *Palm Wine*, old *Mountain*
 or *Canary* will be fittest. 4. Get out in a
 Coach, or on Horseback, as soon as you
 can bear the Air, and use this Exercise as
 far as you can without wearying yourself,
 or be in Danger of catching Cold. This
 is the easiest and most effectual Way of
 getting off a Fit of the Gout.

S E C T. II.

Of the Intervals between the Fits.

Upon the right Management of this Pe-
 riod depends all the Comfort and Ease of

Gouty Peoples Life; this is the Time for making the Fits shorter, less painful, and of lengthening out their Distances. In order to this, the keeping the Stomach and *Primæviæ* clean and in good Order, it's absolutely necessary that Digestion be duly performed: wherefore, 1. If the Stomach be loaded with Phlegm, Choler, and Indigestion, so that there is an Inappetency, or Reaching, or Sicknes, recourse must necessarily be had to a Vomit, the easiest and safest of all which is the *Horse-radish Vomit*, thus prepared, take *Horse-radish Root sliced thin, half a Pound, common Water 18 Ounces*; set these two or three Hours in Infusion, in a gentle Heat, then strain it, when cold drink it off as quickly as you can; let it rest a few Minutes on the Stomach, till you grow sick, and if it works not of itself, assist it with a large Draught of *Sack-Whay*, till it has wrought 4 or 5 Times, to which putting down a Feather, or ones Finger, may contribute. It's the most effectual Peuk yet discovered for pumping up Phlegm, Choler, Wind, and all other Crudities; its volatile Activity cuts and attenuates the Phlegm and Choler, and opens Obstructions of the Glands and Lacteals, and thereby

thereby attenuates and brings up more Crudities than any other Vomit. Should this Quantity be too weak it may be increased to what Quantity will sufficiently answer, by adding more *Horse-radish* and *Water*.

2. As to scouring the Bowels nothing is more effectual than *Rhubarb* and *Arrack*, described above. It not only may, but ought to be taken every other Night, or at least twice a Week by all labouring under Gouty Indispositions; for it's much preferable to the *Sulphur*, in that it gives not those Gripes which the other does, nor runs not into a Looseness as that sometimes does, nor shatters the nervous Fibres, by relaxing them. It's the most prevalent Remedy for carrying off the Gouty Matter, as fast as it is lodged.

3. As to provoking an Appetite, that is generally rather too good, till they arrive at old Age; then *Asses Milk* and *Jellies* are their best Food, and rising betimes and going early to Bed, with gentle Exercise in a Coach, will be sufficient to procure an Appetite for such Food.

4. Diluting much with *Common, Bath, Bristol, German Spaw, or Pyrmont Waters*, both with Wine at Meals, or in a Morning or Afternoon, is the best Way
to

to carry off both *Gout* and *Gravel* its true Attendants, therefore a *Gouty Person* ought never to be without one of these, and they may drink them successively, or one with the other, as the Stomach or Fancy prompts. For in the *Gout*, as well as in all other chronic Cases, Variety is absolutely necessary, to prevent Loathing.

S E C T. III.

For the Winter Season.

The Treatment of this Season consists chiefly, 1. In wrapping the Limbs in Flannel and Woolen : A *Gouty Person* ought to begin after the *Autumnal Equinox* to put on his Winter Garments, by wearing Flannel or Woolen Under-Stockings and Drawers, and putting Flannel Sleeves under the Shirt on the Arms, wearing Woolen and Flannel Gloves and Mittins on the Hands, and interlining the Waistcoat with Flannel, for the Trunk of the Body needs no Flannel, unless the Winter be very severe, then it will be convenient to wear a large Flannel Shirt over the whole Body ; this will keep the Limbs supple, and by Friction of the whole keep up Perspiration as much as possible.

possible. The Flannel and Woollen should be changed but once a Week, and in Summer should be left off about *May*, by cutting Pieces off the Limbs and Body with a Pair of Scissars, Day by Day, till all is consumed, and not laid off at once. 2. In rubbing and currying the Limbs, and especially the Joints Morning and Night, on Dressing and Undressing with a Flesh-Brush; this will promote the Circulation through the small Vessels, and keep up the Perspiration, which is apt to be lessened or obstructed by cold Air or Winter Weather. 3. In lying much in Bed, and keeping within Doors, and supplying the Want of Exercise by a *dumb Bell*, *playing at Billiards*, *gentle Walking*, or being *drawn in a Gallery*, or *riding a Bath Horse*. 4. In taking all Liquors or Drinks hot or Milk-warm, preferring Wines, *Madera*, *old Mountain*, or *old Hock*, to red Wines, strong Wines to small light Wines; swilling down a large Draught of Sack-Whey warm on going to Bed. 5. In being careful not to purge often, for Winter being the Time of Year most exposed to Gouty Paroxysms and Indispositions, too plentiful Evacuations might hinder the Fit, or throw it on the
noble

noble Organs ; therefore all Evacuations that are not absolutely necessary ought to be avoided, except the *Rhubarb Arrack*, which may be taken in all Weathers and all Seasons. 6. If in this Season one finds a Gouty Humour dispersed over all the Habit, or a sluggish Fit, which, oppressing the Spirits, loading the Stomach, hindering Rest, and occasioning hypochondriac Symptoms, will not throw itself out on the Limbs ; the best Way to deal with it, is, to drink strong *French Wines* at Meals, and at Night to take two or three Ounces of *Tinctura Sacra*, with a Dram of compound Spirit of *Lavender*, and as much *Tincture of Snake-root* every Night going to Bed, laying to the Soles of the Feet *Burgundy Pitch Plaisters* with *Euphorbium* ; this will either bring down a Fit, or carry it quite off.

S E C T. IV.

For the Summer Season.

Now the quite contrary Rules of all the last must be observed ; the Flannels must be cut off by Piecemeal, but let rubbing with the Flesh-Brush be continued. Cool Liquors should be used, Claret drunk ; the
Rhubarb

Rhubarb Purges, Exercise, and early Rising ought to be pursued; solid Food sparingly taken, and a little more generous Liquor indulged. But what is chiefly to be done this Season, is, a well ordered *cool Bathing*, to strengthen the Limbs and harden the Joints; as thus; in a convenient Part of the House, a Bath to be made 5 Foot 6 Inches deep, about 3 Yards square, with easy Steps, with 3 Cocks to shut or open at Pleasure, one to convey the hot, the other cold Water, and a third to let out either or both; let this be filled with Water Blood-warm, and the Party go in, then open the Cock of cold Water, and the Out-letter, and stay in till it is so cold that he can scarce bear it, for about 20 or 30 Minutes. He may go in every Morning all Summer, which will wonderfully strengthen and increase Perspiration, especially the cooler the Water is when he goes in, which he may vary at Pleasure, so as to make it as beneficial as *cold Bathing* can be, and that is to receive all the Benefit of the most effectual Remedy yet known (next to the Use of *Bath* and *Buxton Waters*) to preserve the Use of the Limbs.

S E C T.

S E C T. V.

Of the Gout in the Limbs.

Having above given the necessary Remedies and Cautions, when a Fit of the Gout is become regular and fixed in the Limbs, in Pain, Inflammation, and Swelling; here two Things are intended, 1. To have some generous Cordial ready in Case of any Sickness at Stomach, or Pain of Head or Bowels, by the Retreat of the Gouty Matter to these Parts. For all that is to be done in a formed regular Fit, is to fix the Humours in the Joints and Limbs, and to get quit of it as soon as possible with Safety. Let not the Cordial be too hot, lest it inflame, nor too cool, lest it flag the Stomach, and draw the Gouty Humour to it. It may be varied according to the Constitution of the Patient, and State of the Disease at the Time. In general, this I have found good, *viz. half a Dram of Sir Walter Raleigh's Cordial in an Ounce and a half of strong Camomile-Flower Water, Tincture of Castor and Tincture of Snake-Root, each half a Dram, mix for a Dose,* this may be made weaker or stronger by

E e adding

adding or diminishing the strong or simple Water, in what Proportion one pleases.

2. Some innocent and safe Application to mollify the Pain when intense and insufferable, or the Inflammation so high, that it threatens a Mortification. Whatever is now applied must have these two Qualities, *viz.* that it relax, soften, and smooth the rigid, stretched, and distended Fibres to let out the Gouty Humour, in the Part especially. To answer both Intentions, *take old Venice Treacle as much as will spread over the Part affected, pretty thick, moisten it well with camphorated Spirit of Wine, and a Dram of liquid Laudanum*; apply this Mixture as hot as it can be endured, and renew it as it grows cold, by heating it again; one may serve two or three times before it is thrown away. It will enrage the Pain a little at first, but in a few Minutes it lessens both Pain and Inflammation with Safety; because, instead of repelling, (which must never be done) it draws out the Malignity in a few Minutes. But still let the outward Application be what it will, it will be found the shortest Way to assist Nature, to expel the *Venom*. But sometimes the Pain is so intense that human
Nature

Nature can hardly bear it; this will be found as good as the most pompous, celebrated Applications.

S E C T. VI.

Gout in the Head, Stomach, or Bowels.

If it seizes the *Head*, it will be evident from a Giddiness, Heaviness, and Drowsiness, and sometimes an acute Pain in the Part. 1. *Cup* a Pound of Blood out of the Back. 2. Apply a *Blister* on the Scarification. 3. Lay *Burgundy Pitch* Plaisters to the Wrists and Ankles, and *cephalic Plaisters* with *Euphorbium* to the Soles of the Feet. 4. Get half a Pound of *Tincture of Hiera Picra*, half an Ounce of compound *Spirit of Lavender*, two Drams of *Tincture of Snake-Root*, mix, and take 4 Spoonfuls every 6 Hours till it begin to work. 5. *Shave* the Head often, and wash it with a Mixture of equal Parts of *Hungary Water* and compound *Spirit of Lavender*. There are few Gouty Headachs, where the Constitution is not quite worn out, that can long resist this efficacious Process. For the *Gout in the Stomach or Bowels*; if the Stomach is overloaded and full of Crudities

and Foulness, some Vomit will be necessary. The above *Horse-Radish* Vomit exceeds all, but if there is a painful Reaching, as is usual; (without much coming up) it will be sufficient to cleanse it with plentiful Draughts of *small Sack Whey*, *Camomile Posset Drink*, or even warm Water; and when the Vomit is stayed, a little of the above Mixture of *Hiera Picra* and *Spirit of Lavender*, &c. taken by Spoonfuls every Hour, till it work downward; or if the Stomach will retain it without throwing it up again, it may be taken in larger Doses till that Effect be obtained, which will shorten the Duration of the Pain. When it has begun to work, some Doses of the Cordial in *Señt. 5.* may be given to comfort the Stomach and chear the Spirits. Then Chicken-Broth prepared with Vipers may be given to strengthen the Stomach against such Attacks; and to throw the Gouty Matter into a regular Fit, use this certain and proved Medicine, which never fails, where the Person has any Strength left; Take *fine Powder of the best Jesuits Bark one Ounce, of Snake-Root half an Ounce, of the lesser Cardamoms a Dram,* put all in a Quart of old Mountain, let them stand

stand 30 or 40 Hours by a warm Fire-side, then strain it off for Use; a Dose of the strained Liquor is 4 Spoonfuls thrice a Day, for four Days, or a Week. This rarely fails to procure a regular Fit, or to free the Stomach from Pain; for the Gout in the Guts, *Hiera Picra* alone; or the *Arrack Rhubarb* taken 3 or 4 Times, with the Doses of the *cordial Medicine* now and then, carries it off.

P.S. Instead of the *Arrack Rhubarb*, mentioned *Seçt.* 1. and 2. may well be used the universal Gout Pill: *Take the best Rhubarb powdered, finest Flower of Sulphur, or Sulphur, of each two Drams, Oil of Cinnamon two or three Drops, ætherial Oil of Turpentine enough to make a Mass of Pills, to be rolled in Powder of Crabs-Eyes.* Dose three in the Morning, and as many at Night, in the Intervals of the Fit. In this Form one has all the Advantages of the *Sulphur*, without its Disadvantages. No other Course can exceed the Benefit of the above Rules, to such as are pretty well in Years and accustomed to live high, for a slenderer Regimen to them might be of bad Consequence, in inviting the morbid Matter from the Extremities to fall on the noble Parts. Observe,

serve, that only acute Pains can justify the Use of Opiates; or if the Person is low-spirited all Day, looks pale, is restless all Night, has small wandering Pains, I prefer the Use of *Matthews's Pill* given with the above Cordial, instead of *Laudanum*; or thus, *Take Matthews's Pill 8 or 10 Grains, Salt of Amber, Castor, of each 6 Grains, Contrayerva Stone a Scruple, Confection of Alkermes half a Dram; make a Bolus and give at Bed-time.* This brings off a deal of the Gouty Humour by Urine. If a Fit of the Stone and Gout happen at once, this Bolus may be used, and *Turpentine emollient Glysters* thrown up. But all *Opiates* palling and relaxing the Stomach, only Pain can warrant them; and even then they are rather to be given in small Doses often, than in full Doses at once, and always to have some *Volatiles* with them. Where the Disease falls on the Lungs, with a violent tearing Cough, *Volatiles and Aromatics* must be used, with warm *Balsamics*, (for Pectorals signify nothing) as, *Take Salt of Hartshorn, Amber, Powder of Castor, of each 7 Grains, Raleigh's Confection a Scruple; give in a Bolus.* If they cannot rest, from 5 to 8 Grains of *Matthews's Pill* must

be added, and repeat the Bolus thrice a Day without the Pill, and use the above Methods to bring the Gout to the Extremes; with their Drink may be given 20 or 30 Drops of the *Balsamick Tincture* 3 or 4 Times a Day. To ease the Inflammation and Tendernefs of the Parts after the Fit, *Take Oil of Sweet Almonds one Ounce, white Wax 2 Drams, Sperma Ceti a Dram and a half, Camphire 10 Grains; mix, and spread on thin Leather, and apply.* In Case of a *Looseness* during the Fit, *Liquid Laudanum* must be used, if that fails, use with it the above *Cordial* in small Doses. The Intervals between the Fits may be made longer or shorter as the Sufferer pleases, by Temperance, Exercise, and Regularity; such as cannot give up with *Gluttony, Intemperance, and Idleness*, and take to a moderate Use of Venery, (and if young) little or no Wine, deserve to suffer; Abstinence will in a great measure compensate the Disuse of Evacuations; yet a little Powder of *Gum Guaiacum* may be usefully taken twice a Day in a Dish of *wild Angelica-Root Tea*. Younger Sufferers should not omit strong *Exercise, cold Bathing*, and a *Tea, or Milk Breakfast*, and forbear all animal Food to
 Supper,

Supper, and always keep good Hours of rising and lying. I was free from all hereditary Taint of this or any other Disease; about the 38th Year of my Age I indulged a freer cheer-upping Glafs of Wine, always moderately. In the 43d Year of my Life I was suddenly seized with a short regular Fit, in the 44th had another. Did not much like neither the Pain, Confinement, nor needless shattering of my Constitution, I left off Wine, Punch, (for Ale I never did drink) *Flesh Suppers*, eat *Milk*, constantly to Breakfast and Supper, 2 or 3 Ounces of Flesh to Dinner, have not had a Touch of it or any other Disease this 14 Years, and intend never to have it more: Only I used River Bathing two or three Summers after, thrice or oftener a Week. So this confirms me, that not so many needed suffer these racking Pains if they would be wise.

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